IBM 3270 PT7 ✕
You have a choice. Consider the alternative.
For all the details contact: PT7 Sales, Ferranti Computer Systems Limited, telephone 061-437 5391
FERRANTI

COMPUTER WEEKLY

Number 661 Thursday, July 12, 1979 Price 18p

Data Preparation
We have the capacity to punch your peak loads, file set-ups or regular work on 80 Column cards
Croydon: Nada Waugh 01-988 2244
Warrington: Paul Wakenon 0925 53381.
Lowndes-Ajax Computer Service
COM Remote Computing
MVS/TSO

Honeywell denies pull-out from CII-HB

FIRMLY squashing growing speculation in Paris that moves are afoot to increase the French shareholding in CII-Honeywell Bull, Honeywell says its stake in the jointly-owned company is not for sale.

"Honeywell considers its 47% ownership of CII-HB an excellent investment and has no intention of reducing its share, " a spokesman at corporate headquarters in Minnespolis told Computer Weekly.

Speculation has orisen because industrial conglomerate St Gobain Pont-à-Mousson is actively seeking a stake in CII-HB, either directly or through Compagnie des Machines Bull, the French company which holds 53% of the shares in CII-HB.

Since Honeywell has firmly ruled out the first option, adding that it is not in any way involved in the St Gobain negotiations, all that is possible is a restructuring of the existing shareholdings in CMB.

Of the total 80% is held by the public at large — and St Gubain could try to acquire some of these. Another 20% is held by the French state directly, and is almost certainly not for sale. The remaining 20% is held by another holding company, Opagep, in which the big French electrical and electronic combine CGE has 51% of the shares while a consortium of banks holds the remainder.

There has been speculation that CGE might be prepared to sell its stake to St Gobain. Although CGE is understood to be dissatisfied with the direction CII-HB has been taking, this seems unlikely.

Since the merger between CII and Honeywell Bull in 1976, CII-HB has succeeded in turning itself into a very broad-based company with an identity distinct from that of Honeywell. Major decisions taken in France include the acquisition of 60% of microcomputer pioneer R2E, the establishment of a joint company with systems house SESA for the implementation of complex large-scale computer projects, and a decision to seek acquisitions in the office automation field.

A broader spread of Honeywell computers is now manufactured or assembled in France than in any other country, including the US.

NEWS IN BRIEF

Xerox after Microdata?

THE mystery suitor for US minimaker Microdata has still not been unmasked, but UK sources name Xerox and ITT as prime candidates. If Xerox is interested, it will represent an ironic about-turn for the company, which closed down its Xerox Data Systems operations in 1975, and subsequently passed the hasc on to Honeywell.

Xerox Data Systems manufactured and marketed a highly-regarded minicomputer, the Xerox 530. The growing interest at Xerox in the automated office market makes an in-house minicomputer capability particularly desirable.

WP software

A SOFTWARE package supporting word processing on the IBM System/34 has been developed by Gordon Brownbill Computer Services, of Warrington. The system caters for mixed upper and lower case printing, in conjunction with an IBM-supplied 96-character print belt.

Doctor's authority

TO oversee controls on medical records, a doctor should be included in any Data Protection Authority that is set up, according to a resolution passed at the British Medical Association annual meeting. The doctor should be a clinician in active practice, as distinct from someone working in, say, community medicine, it was agreed, and he should have experience of computers.

German group

GROWING interest in BCPL in the German-speaking lands has led the University of Regensburg Computer Centre to organise a BCPL users meeting in Regensburg, West Germany, for July 12. Given sufficient interest, a German BCPL user group will be formed to complement the similar UK group formed earlier this year (Software File, March 15).

Lloyds pay out huge sums on leasing policies

UNDERWRITERS at Lloyds of London are having to pay out considerable sums as a result of claims under the controversial "J" policies written for third party lessors of IBM equipment in the US, although the corporation said that no firm of underwriters would be faced with "an individual claim of any great magnitude".

Earlier this year Lloyds estimated that the claims under these policies would total about $200 million, but industry sources have said it could be considerably more. The biggest user of the policies, Itel, is understood to have claims of more than $100 million outstanding.

There are 17 third party lessors with "J" policies in the US, and Lloyds said the claims were being borne by 60 firms of underwriters and several other insurance companies.

The claims started to come in in 1977, three years after Lloyds started writing the policies, and fresh claims will continue to be made until the end of this year (CW, December 8, 1977), three years after the last policies were issued.

By the end of next year nearly all the equipment covered will have reached the point where the three-year break clause in the original leasing contract can be invoked by the lessee, the consequences of which the "J" policy is intended to guard against.

Payments to lessors who have had their claims accepted by Lloyds are made on a monthly basis and they make up the difference between what the lessing company is actually receiving in rental payments from a second lesse on the machine and the sum insured on the "J" policy.

Lloyds pointed out that about half of all the equipment covered by the "J" policies was peripheral equipment, as opposed to CPUs. The total original value of all the equipment involved was about $2,000 million and the total sum insured came to about $1,000 million.

Asked about the role of the First National Bank of Boston with which Lloyds is now working in the US, Lloyds said that the bank's role was simply that of an administrator, facilitating the payment of claims. The bank pays the individual claims on the many items involved to the lessors on a monthly basis and is reimbursed in a lump sum each quarter by Lloyds.

Lloyds said this arrangement removed the necessity for every underwriter in London to be consulted before any claim was paid in the US.

Lloyds stressed that the Boston bank was not organising any massive sell-off of the insured machines and neither was any broker or group of brokers. The re-marketing of the machines was entirely in the hands of the lessors who hold "J" policies.

Distributed processing has been introduced at the Central Electricity Generating Board, North West Region, in the form of a CMC Sovereign multiple processor having system. As well as being used for data entry to the board's IBM mainframes, the Sovereign will carry out critical path analysis, work planning, and plant reliability studies.

UK Apple dealers' concern about future

A NEWLY formed Apple Dealers Group is to send a representative to the company's headquarters in Cupertino, California, next week, to try and get a statement from the company on the Apple distributorship situation in the UK.

The group, formed partly in response to the appointment of Data Efficiency of Hemel Hempstead as master distributor for the country (CW, June 28), held its inaugural meeting last week.

The group's representative to Cupertino will be Alan Woods, managing director of Digitus. "We all think Apple is a tremendous product and we all want to continue dealing, but we want to know we have sources of supply," he said.

Of the position of Apple's first UK distributor, Personal Computers, Woods said that he did not believe Apple would dump it as a distributor. "If it does, then we want to know who is going to be dumped next."

Data Efficiency circulated all existing and potential Apple dealers last week with a statement of the new distributor position in the UK.

First 4331 delivered in UK

WHAT is believed to have been the first IBM 4331 to be delivered in the UK was installed last week by SDI at its High Wycombe offices. It was supplied to SDI by International Brokerage and Leasing, of Ascot.

Two other software product companies in direct competition with IBM have also been hard in being awarded machines on the first batch.

These are MSP, which is to take delivery of a 4331 in the middle of this month, and Allergo, which has been offered its machine for August.

Suggestions that these would be respectively the third and sixth 4331s to be delivered in the UK were refuted by an IBM spokesman, who said that no machines had already been delivered, in addition to the mentioned.

He could assign no significance to the fact that for software product companies had emerged close to the head of the list following the customer order randomisation.

Computer education exhibition

COMPUTER Education will be the theme of a one-day exhibition and conference being held on July 11 by Radnor College of Further Education in Llandrindod Wells, Powys, as part of the Microprocessors Application project.

Five GA directors sued by former president

STILL sore at being ousted from the presidency of the company that he founded (CW, May 31), General Automation's Larry Goshorn has launched a new lawsuit against the five directors who voted his removal. Goshorn remains a GA director, and the lawsuit alleges inter alia that his fellow directors have posted armed guards to deny him access to company premises. The other directors refute all the allegations in the suit. They say that Goshorn has had full access to company premises and add that each director has an obligation to act responsibly.

The suit is the second brought by Goshorn.

INTRODUCTORY OFFER!
(Inr all orders received before September 1 1979)
£1625
thu inclusive price fnr both the following compilers – also documentation end 12 months' maintenance
HPAC CORAL 66
HPAC BCPL
for DATA GENERAL computers suitable for the micro NOVA, 800, 1200, NOVA 3, NOVA 4 end Eclipaa.
The ahove compilers are fully compatible with similar HPAC products for the POP-11 (including LSI-11) end NAKED MINI series of computers.
Note. Under e marketing agreamant batwean CAI Ltd and HPAC Ltd affective July 1 HPAC compilers for Computer Automation's computers will be marketed by HPAC at £750 each inclusive of maintenance.
For further information please contact:
HPAC
Mrs. E. Vincenti
HPAC LIMITED
Cherwell House
London Place
St. Clement's,
OXFORD, OX4 1YT
Tel: (0865) 724881
Telex: 837106

CRANFIELD COMPUTER SERVICES LTD.
COMPUTER HOUSE CCS
49–53 Bellegrove Road Welling Kent DA16 3PB
Tel: No 01-304 8326 Telex 896138
CRANFIELD is a company offering a TOTAL range of supplies to the computer user
OUR RANGE OF PRODUCTS INCLUDES
☐ COMPUTER LISTING PAPER
☐ PRE-PRINTED COMPUTER FORMS
☐ TERMINAL ROLLS AND CONSOLE STATIONERY
☐ MAGNETIC MEDIA AND ACCESSORIES
☐ MAGNETIC TAPE AND DISC/CLEANER/CERTIFIER
☐ PRINTER RIBBONS
☐ PRINT OUT BINDERS
☐ PAPER TAPE AND ACCESSORIES
☐ FORMS HANDLING EQUIPMENT
☐ TABULASELS
☐ COMPUTER ROOM FURNITURE
☐ FIRE PROTECTION EQUIPMENT FOR DATA RECORDS
☐ COMPUTER CABINETS FOR VALUABLE MEDIA
☐ FLOPPY DISCS
It is impossible to list our complete product range which covers ALL requirements. Should YOUR requirements not be mentioned consult us, and we will be pleased to give every assistance
We offer only QUALITY products with PROMPT delivery at a competitive price.
Please send me further details of the items marked in the appropriate box
Name
Company
Address
CRANFIELD PUTS THE CUSTOMER FIRST
A MEMBER OF THE CRANFIELD GROUP OF COMPANIES

Flexlease your 370 or 4300 from Atlantic
— Cheaper than IBM rental
— As Flexible as IBM rental
— Fixed price
— No additional usage charges
Call us for a Flexlease quotation
Atlantic Computer Leasing Ltd., Atlantis House, Red Lion Court, London, EC4.
Tel 01-583 9681. Telex 28634

Printed in Great Britain by QB Limited, Sheepen Place, Colchester, CO3 3LJ, and published by IPC Electrical-Electronic Press Ltd., Dorset House, Stamford Street, London, SE1 9LU.

Briefing

Benjamin quits CSA for ICL

ONE of the best known faces in the UK computer industry, Alan Benjamin, director-general of the Computing Services Association, is leaving the CSA to join ICL as divisional director of corporate communications — a post that puts him in charge of all ICL's public relations, promotion and advertising.

He is taking over from Peter Hall who is retiring after more than 20 years in the computer business.

Overtime ban

AN overtime ban by civil servants at the VAT computer centre in Southend is affecting operations there. The action by members of the Society of Civil and Public Servants, is a response to the recent government cuts in public sector expenditure and the ban on recruitment in that area.

☞ More strike stories: page 3.

Papers for DPP

PAPERS from the investigation by Nottinghamshire police into an alleged breach of security at the Police National Computer have been sent to the Director of Public Prosecutions, who is considering whether to bring charges. A police sergeant was suspended last December when he was accused of supplying the names and addresses of car owners to staff working for Ladup casinos (CW, January 11).

Scottish centre

A CENTRE to develop microprocessor applications and encourage industry to use them is being considered for Central Scotland by the Scottish Office. Alex Fletcher, Minister for Industry and Education at the Scottish Office, said in Glasgow this week that he hoped the centre would be set up well within the next two years, possibly based on an existing establishment.

Back to work

UNIVAC technicians at the Twin Cities plant in Minnesota returned to work on Monday after approving a pay offer. The 2,700 electronic technicians went on strike in May (CW, May 31). The plant is the sole source of Univac 1100 Series CPUs, including the new low-cost 1100/60.

Hambros choice

ICL user, Hambros Bank, has decided to go to Univac rather than ICL for the machine to take over an online transaction processing and information retrieval workload from two ICL 1903Ts. Hambros has ordered the first Univac 1100/60 in the UK and the bank says that Univac offered better price/performance and was the only supplier to put forward a complete package with detailed and practical transition proposals.

ICL defends suit from Telecomputing

A HIGH COURT writ has been issued against ICL by the Oxford firm, Telecomputing. The writ alleges breach of contract over the joint marketing of TPS, the teleprocessing monitor developed by Telecomputing for ICL's 2903 and 2904 machines, and follows Telecomputing's rift with ICL earlier this year (CW, April 19).

The writ, which claims damages of £2½ million, alleges that ICL broke the contract by terminating it unilaterally. It also claims that the marketing agreement was never fully implemented by ICL, in that it failed to sell TPS as a standard program product.

ICL says it has been advised that the claims are without substance and that it will defend any legal action vigorously.

Earlier this year, ICL sought to extend its 1977 agreement with Telecomputing to give it full marketing rights. Telecomputing had previously reserved exclusive rights to sell optional components of TPS, such as the Advanced Terminal feature, and to the 1900 market.

The breakdown of these negotiations was swiftly followed by ICL's announcement that it had terminated the marketing agreement and would no longer be selling TPS anywhere in the world (CW, April 19).

Lloyd's hits back over leasing writs

IN response to the massive Federal Leasing law-suit reported exclusively in Computer Weekly two weeks ago (CW, June 28), Lloyd's of London has announced that it will consider a counter-suit against Federal for "monies already advanced" by underwriting syndicates that provided Federal with cover under the so-called "J" policy.

The "J" policy contains a vital clause requiring the lessor to exercise due diligence in re-marketing a machine covered by the policy. Only then will the underwriters agree to pay the difference between the rental the lessor is receiving from the new lessee and what he originally anticipated he would get.

Lloyd's said that in connection with the suit it would consider whether Federal had exercised and continued to exercise due diligence; whether, after inspection of all relevant documents, any outstanding "J" policy claims by Federal were valid and due for payment or whether, after consideration of these documents, the insurers should pursue a counter-claim.

Over the last two years Lloyd's underwriters have paid about $10 million to Federal, and the lessor is claiming that another $27 million is outstanding.

The biggest claimant involved in the whole "J" policy affair is Itel which, according to reports in the US press, has offered legal support to Federal's suit. Itel has strenuously denied the reports.

Regardless of the Federal suit, Lloyd's underwriting syndicates are paying and will continue to pay out substantial sums under the "J" policies (CW, July 5), and 17 London insurance companies which co-insured the leasing companies under the policies are also facing claims.

Third party

ATLANTIC Computer Leasing is moving into the third party IBM maintenance business through its subsidiary, Atlantic Computer Engineering, which was formed last year to handle equipment installation and the fitting of special features.

3-year wait for 4300s

US CUSTOMERS have now been notified by IBM of delivery dates for their 4300 machines — and some will have to wait almost three years.

Following announcement of the delivery dates, leasing companies are up in arms, because they believe IBM has discriminated against them. Typical is Greyhound Computer Corp, which told the Wall Street Journal that it ordered 380 machines, and was given delivery dates on only four of them.

IBM has denied discriminating against leasing companies in the draw, but is known to dislike the way companies have in the past sold early delivery dates at a premium.

CA under investigation

IT never rains but it pours. After announcing that it expected to announce a loss for its financial year which closed last week (CW, June 28), Computer Automation is being investigated by the US Securities and Exchange Commission and is being sued by a shareholder.

The SEC is investigating allegations that officers of the company made misleading statements while trading in the company's shares and the shareholder is suing the company and its officers for allegedly making false statements about its financial condition.

Youngest exhibitors at the 1978 Microcomputer Show last week were Carl Lloyd-Parker (right) and Terry Brown, both 15, who were given space on the Comp Computer Components stand to sell their games cassettes to run on Nascom 1 microcomputers. Sales of the games, which included Battleships and three dimensional noughts and crosses, enabled them to take up offers of cut price memory expansion boards from Nascom and second-hand RAM chips from Comp. They will now be able to produce high-level programs in Microsoft Basic.

One interested visitor to their stand was CW writer Donald Kennett (left). Show report on page 12.

Itel AS models delayed

TWO new models in Itel's AS line of IBM-compatible processors were to have been announced on Monday — but the launch never came. The postponement gave rise to speculation in the US that Itel's Japanese partner Hitachi is awaiting completion of Itel's financial restructuring before approving the announcement.

Designated the AS/7 and AS/8, the new models were expected to be single and dual processor versions of the largest Hitachi machine, the M-200H. The M-200H is rated at between 7.5 and 9 mips, million instructions per second, compared with 4 to 4.5 for the IBM 3033.

As predicted in Computer Weekly (June 14), Itel is now shipping mid-range 370-compatible processors from IPL Systems to its European customers as an alternative to the AS/3-5 and the AS/5-3 from National Semiconductor.

Itel has scotched suggestions that Hitachi might buy its Data Products division (CW, June 28). A company spokesman in San Francisco told Computer Weekly that Itel had no intention of selling the division.

First big UK order for Norsk

EIGHTEEN months after its arrival on the UK market, the Norwegian Nord minicomputer from Norsk Data has scored its first major success with a £750,000 contract from the Joint European Torus nuclear fusion research project at Culham Laboratory, Oxfordshire.

The order confirms Norsk Data's pre-eminence in the European nuclear research market; the company is one of the largest suppliers of minicomputers to CERN, the Centre for European Research into Nucleonics in Geneva.

The order, awarded to Norsk Data's UK distributor Richard Norton (Nord) of London, is for 15 of the new Nord-100 machines plus one Nord-500 32-bit back-end scientific processor.

The Nord-100 is the latest model in Norsk Data's 16-bit mini line. It is built using the AMD 2901 bit-slice micro, incorporating a high-speed cache memory with the processor contained on a single board.

The machines for Culham will come from Norsk Data's new plant in Fermy-Voltair, France, which was established to take advantage of tariff advantages for machines built within the EEC.

The Nord 500 will be used for storage and analysis of experimental results, and will be linked to two Nord 100s, each handling communications in the system.

One of these will be linked to a control computer and the other to a display computer, while the remaining nine Nord 100s will be used for control of the Torus, diagnostics and testing.

INSIDE THIS WEEK'S CW

NEVER FINISHED
NINETY-nine per cent completion is the most that can be hoped for when programs are being written, and according to one researcher they never are completed, since they are a model of the real world. His argument appears in Programmer Notes. Page 8

MUTUAL DENIGRATION
IN the videotex field the UK and France have much to offer, but instead of making the maximum use of their knowledge by pooling it they waste time in mutual denigration, says David Butler of Sutler Cox in a letter to Computer Weekly. Page 9

ALSO .....
Computerview on changing role of the DPM .. 2
Halifax plans cash dispensers .. 3
Ops hold back pay rises .. 3
Downtime by Cincl .. 4
Disc drive challenge .. 4
NCC business up 38% .. 6
Memorex takes IBM to EEC .. 5
Michie's Privateview .. 8
Puzzler .. 8
Software File .. 7
Op Spot .. 8
People and Events .. 10
Micro News .. 12
Cogerview .. 13
Introduction to Pascal .. 14
Checklist .. 15
Sales and Marketing Bit .. 45
Battle over cash cuts .. 48

JOB OPPORTUNITIES: PAGES 18-47

Data Logic
Lexitron
More than a word processor. A total approach to today's office needs.
Easy to use. Scientific symbols. Standard, wide-track and twin-track printers. Communications. Link to mainframe. OCR input. Telex tape punch. Photocomposition.
See us at the International Word Processing Exhibition, Wembley. July 10th-13th. Stand 56, Avon Suite.
A Pergamon Company

COMPUTER WEEKLY

Vol. 27 No. 681
Thursday, July 12, 1979

Editor
John Kavanagh 01-261 8033
Deputy Editor
Tony Higgins 01-261 8696
Advertisement Manager
Harry Hutson 01-261 8359
01-261 8503
Class Ad Manager
Brian Durrant 01-261 8597
Publishing Director
Dr J. A. G. Thomas
Editorial Director
Chris Hipwell

IPC Electrical Electronic Press Ltd, Dorset House, Stamford Street, London, SE1 9LU.
Telephone: 01-261 8000.
Telegrams/Telex: 25137 BISPRS G

Branch Offices: Birmingham, Manchester, New York.

Published weekly on Thursday

IPC Business Press Ltd 1979.

CIRCULATION INQUIRIES
Requested Readership: 01-837 3636
Subscriptions: 0444 59188.

Members of Computer Weekly staff may be contacted directly on the extensions listed below. Other departments in Dorset House may be obtained by dialling (01) 261 8000

EDITORIAL
Keith Jones 261 8344
Tim Palmer 261 8031
Peter Howitt 261 8303
Rory Johnston 261 8025
Martin Banks 261 8000
Robin Webster 261 8170
Bernard Allen 261 8035
Donald Kennett 261 8719
Mike Marples 261 8042
Dan Mitchell 261 8042
Chris Youett 261 8543
Nancy Pacock 261 8543
Judith Morris 261 8843

ADVERTISING
Display
Chris O'Hea 261 8656
Lloyd Collins 261 8743
Steve Bass 261 8283
Ian Carter 261 8106
Manchester
Harry Aikes 061-872 4211
Birmingham
Ken Perrott 021-356 4838
Classified
Chris Prior 261 8029
Eddie Ferrell 261 8087
Mark Williams 261 8018
John Fuller 261 8088
Ken Walford 261 8484
Mark Pulver 261 8174
Manchester
Owen Kelly 061-872 4211
Birmingham
Basil McGowan 021-356 4838
Production
David Abbey 261 8018
Steve Robinson 261 8638
Peter Regis 261 8815

ISSN 0010-4787

Change in the role of the DP manager

PITY the poor DP manager. Striving to keep his installation operating with even moderate efficiency he is faced with a host of problems: excessive down-time; programmer productivity (or lack of it); upgrading his equipment; software conversion; unscheduled user demands; training staff; losing staff; recruiting staff; and so on.

Now a speaker at an NCC seminar has, according to one other weekly computer publication, labelled DP managers as "useless", asserting that they and their departments are more trouble than they are worth. Laughable? Maybe. But there is a wind of change in computer technology which is blowing strongly and the DP manager will have to adapt to it or suffer the consequences.

As in so many other areas, it is the microprocessor as an agent of change which is provoking a re-assessment of the DP manager's role. But the problem goes beyond the micro and, indeed, calls into question the very basis of the DP manager's relationship with the organisation he serves.

For too long the DP department has been regarded as a law unto itself, tacked on to the edge of the organisation chart, providing a service in ways which were but dimly understood by top management.

In the days when DP budgets were automatically increased without question every year this may have suited the DP manager and it certainly suited the mainframe supplier. A certain mystique surrounded the DP department and a cosy relationship developed between the DP manager and his friendly neighbourhood computer salesman, undisturbed by such considerations as whether the department was responding adequately to the computing needs of the organisation as a whole.

That may be regarded as a somewhat extreme view of a situation which has long since ceased to exist. And that may largely be so, but it would be hard to deny that the legacy of that situation is still with us.

Its main symptoms are an unwillingness by management to make the effort to understand what computing is all about; an equal unwillingness by DP managers to do away with the mystique surrounding their activities and to abandon their privileged but isolated position in the organisation; and a consequent failure to merge the DP department and its expertise into the fabric of the organisation in such a way that the growing expectations of users can adequately be met.

In the circumstances there is ample scope for misunderstanding and frustrations to arise. The DP manager is doing his job as he has always done it: keeping the mainframe operational, running the applications programs to schedule and dealing with the staff problems as they arise. What more can he, should he, do?

But user expectations are changing. Line managers see computing as a resource which should instantly be available to their departments. They can read. They know what the technology is capable of and they don't want to hear a hundred, probably valid, reasons why it can't be done by their own DP department.

It is in this context that awareness of the potential of minicomputers, microprocessors and, to some degree, word processors, can call into question the effectiveness of the DP manager and his department.

What is the solution? Unless organisations are to run the risk of large numbers of small and possibly incompatible systems being installed by individual departments with varying degrees of effectiveness, responsibility for the introduction of computer systems and equipment incorporating computer technology should be vested in a single department, and it is reasonable to assume that this should be the DP department, provided that the DP manager is prepared to take a sufficiently wide view of his role.

While this may not prove too difficult as far as computing functions are concerned, whether the hardware be a mini or a micro, the problems associated with the introduction of word processing could prove more intractable from the organisational and human point of view, as the DP manager would be concerning himself with clerical and secretarial rather than computational skills.

However there is a school of thought which has it that data and word processing are converging under the influence of such technological factors as distributed processing, falling microprocessor and memory costs, and advances in software support for decentralised text handling systems.

Amy Wohl of Datapro, an expert in the word processing field, states that "the sensible data processing manager will start now to examine where word processing came from, where it is today and where it is likely to go tomorrow. With this information he will then be in a better position to guide his company as it makes choices which will affect the future of his own department."

The key word in that statement is "choices". Whereas the old relationship between DP manager and computer salesman was largely concerned with limiting the choices which would be made in terms of installed equipment, the new and uncomfortable fact about computing in the 80s is that the choices will be virtually limitless.

It will be the DP manager's task to guide his organisation in making decisions about the introduction of new technology and in so doing he will greatly increase the influence of his department. If he is bold enough to take up the challenge.

Ten years ago...

COMPUTER WEEKLY, JULY 10, 1969

IBM, in cutting down discounts to universities in the US, was thought to have been influenced by the anti-trust suits it was fighting . . . The CDC 7600 and IBM 360/85 were on the short list for the Met Office's "very large" replacement for its KDF 9 in Bracknell . . . Due to start in the autumn, Leasco's five-year plan for time sharing in Europe was to include eight British-built CT Modular Ones, and four Hewlett-Packard Type 2000As . . . The Giro's expected £4 million loss for the current financial year had been anticipated and allowed for, Postmaster-General John Stonehouse told the Commons . . . The USSR had plans for a network of 100 DP centres to plan all aspects of the country's economic development . . . French Plan Calcul chief Maurice Allègre criticised CII officials for using pressure on government administrations to use CII equipment.

MSC disc drive controller

A SINGLE-BOARD, high density disc drive controller that is plug compatible with IBM 360/370 type mainframe computers, has been introduced in the US by Microcomputer Systems Corp. of Sunnyvale, California.

Known as the MSC-1230, the controller acts as an interface between any CPU using a block multiplexer or selector channel and large capacity disc drives. It can therefore link a wide variety of processors, such as the Magnuson or TwoPI CPUs, to any industry standard storage module drive.

The controller is also software transparent, allowing the use of all standard IBM software routines. Some of the IBM diagnostic routines have not been implemented, however, though IBM-compatible error correction code and built-in microdiagnostics are included.

Intel add-ins

NEW add-in memory boards for the Data General Eclipse and Nova computers have been introduced by Intel. For the Eclipse, the in-5150 offers either 32K or 64K of 16-bit words, while for the Nova, the in-5160 range offers 32K, 64K, 96K or 128K of 16-bit words.

Wilkes

TERMINALS
VT100 Video Terminal From £1195
LA180 DECwriter I From £1975
LS120 DECwriter III From £1625
LA34 DECwriter IV From £890
Newbury Lab's latest range of British VDUs
NL From £495
132 col x 24 line VDU with VT52 software
Pericom From £1285
Texas Instruments Range of Printers
TEXAS INSTRUMENTS From £1295
HAZELTINE VDU Range From £550
TELETYPE 43
TELETYPE From £865
QUME SPRINT 5
Qume From £2020
SYSTEMS
LSI-II Modules available ex-stock. Customised to individual specification
ALL PRICES EXCLUDE V.A.T.
Wilkes Computing Ltd.
Bush House, 72 Prince St., Bristol
Tel (0272) 290651 or 25921 Telex 449209

'Who can we turn to?'

KNOCKING the large-scale computer is becoming a feature of 1979. Management of small systems, it seems, carries more merit and respect than any amount of master-minding full-scale operations complete with datacomms, database and data snags.

The current fashion was emphasised when, for the third year running, the winner of the IDPM/Data Logic management award came from the ranks of small machines. Large-sized systems did not even warrant an also-ran.

It could be, of course, the noticeable lack of DP managers on the judging panel which produced the almost predictable result. In fact the only DPM present was last year's winner, a talented manager of a small system.

Such large-scale reticence is by no means apparent in the American DPMA's Man of the Year Award. The winner this year, Irwin J. Sitkin, heads a DP operations team of 600 people and a budget of $80 million.

In the course of his award presentation, Sitkin said that DP management's job responsibilities were increasing. His opportunities had not so much to do with technical virtuosity and equipment management, but with managing corporate resources. The aim was for less equipment managing and more people development. Top management were only just beginning to become aware of the responsibilities of the DPM.

This awareness, alas, is not reflected in the UK, where in too many cases the DP department is regarded as a pain in the company budget.

Who, then, does support the main line of DP management, the managers of medium and large computer departments? Support for the cause is seemingly hard to find. The chips which DP managers carry on their shoulders are by no means micro-sized — more like mass arrays.

Not only are they being bugged by anxious users worried about slipped implementation timescales, the company accountant querying the escalating costs of software and the personnel manager concerned with the high recruitment turnover; but they are now having to face hostility from within the DP industry itself.

For many installations, the theme must be "Who can we turn to?" Apart from the trade journals, and the IDPM for much of the time, only manufacturers and the service industry support the cause. However, from time to time defenders of the DP faith do surface.

One such consistent ally is Lord Avebury. He has firmly argued that attempting to downgrade the importance of the DPM would be a grave mistake.

Similar views have been expressed by Alec Park of STC. DP, he says, is no longer a backroom enterprise. The DP industry must start blowing its own trumpet, especially towards senior company management.

1984 and all that...

THIS week's example of the strange things people say in the media about computers was sent in by D. M. Odell, of Comberton, Cambs, who wins £5.

These machines are finding their way into schools, where children can and do create their own programmes. The best programmers in this country seem to be between the ages of 11 and 13.

Barty Phillips in the Observer

Modata
30 ST. JOHN'S ROAD
TUNBRIDGE WELLS (0892) 39591
DIGITAL MICROSYSTEMS DSC-2
LOW COST COMPUTER SYSTEM INCORPORATES:
• ONE MEGABYTE of floppy disk storage on two single sided 8" drives — standard.
• 64 BYTES of Main Memory standard — 32K and 48K also available
• CP/M DISK OS standard & TEXT PROCESSING BASIC COBOL FORTRAN available
EXPANDABLE — Add-on Hard Disk System — Up to 28 Megabytes per drive
MODATA ARE LOOKING FOR DEALERS & DISTRIBUTORS

Enhancements boost System Ten success

WHEN ICL took over the international base of Singer Business Machines in 1976, few people gave much for the company's chances of winning more than moderate new business with the System Ten small computer, which was widely regarded as an ageing and inflexible product.

Yet since the launch of the new 220 model in February 1977, the System Ten has been a runaway success, exceeding all forecasts and ICL's own expectations. Over 2,000 220s, worth £110 million, have been sold, and the worldwide System Ten base, including older models, is now over 5,000.

To keep the ball rolling, ICL has added several hardware and software enhancements to System Ten. A new, low-cost, low-volume 100 cps matrix printer is now available, and new interactive keyboard printers, one for local and one for remote installation, have been introduced. These are likely to appeal particularly to users of the System Ten with the 9500 line of point-of-sale and 9600 factory data collection terminals, and will enable users to communicate through the System Ten with a mainframe. The printer, a 30 cps device, is also available separately for remote installation.

On the software side, an enhanced, more efficient version of the existing Systar accounting package, complete with the latest version of the Paypac payroll package, is now available. First-time users are offered a System Ten with VDU and the new Systar package for £19,000 or £400 a month.

Completing the line-up, ICL has put together three upgrade packages comprising VDU, video connection and two add-on memory options at discount prices.

● The System Ten is finding increasing favour with small building societies, and two, the Manchester and the Rugby Provident, have just ordered System Tens with the building society software pack.

Halifax plans to use cash dispensers

A POTENTIALLY revolutionary experiment with online cash dispensers at the Halifax Building Society has proved successful, and the Society now plans to install dispensers in a few key branches.

Meanwhile the Society has given Philips its long-delayed breakthrough into the building society market with a £10 million contract for PTS 6000 terminal equipment. The contract puts Philips in a strong position for a follow-up order for cash dispensers from the Halifax, which is the world's largest building society.

The order for Philips is particularly significant in that the Halifax is the most cost-conscious of all the big building societies, and claims that its management expenses measured by the yardstick of costs per £100 of mean assets are the lowest of the top 17 UK societies and have been declining since 1975.

The Halifax is at present equipped with two IBM 370/155s, one running under MFT and the other under OS/VS1; a new data centre is under construction and will be completed in spring 1981. The Society would like to move direct to the forthcoming IBM H-series but does not expect it to be available in time.

It replaced its 145 with a second 155 last year, realising that the residual value of the 145 would collapse as soon as the E-series was announced. Expecting the same to happen with the 3030 series when the H-series is announced, it is not keen to get a 3032, and is currently considering either a used IBM 370/168 or an Amdahl 470. It will need the power of a 168 to run the online network to be built using the PTS 6000 equipment. It will ultimately convert to MVS, when the operating system meets its requirement.

The equipment being supplied by Philips comprises keyboard, strip display and 120 cps cut form printer for installation at 2,500 cashier positions, plus branch controllers and back-office VDU terminal and printer, for 400 branches. The first back-office terminals will be installed early next year and the network should be substantially complete by the end of 1981.

The pilot cash dispenser trial, using an IBM 3614 at head office, has proved entirely successful with no errors or software faults. The Society is therefore taking delivery of five of the new IBM 3624 dispensers over the next six months, for installation at key branches. They are being acquired on rental, so that the Society is not financially committed to any particular type of dispenser, and if it decides to go ahead and establish a full dispenser network, will do a full evaluation. As resident terminal supplier, Philips will be favourite for the contract.

Several other building societies have been considering cash dispensers, and the decision by the Halifax to begin installing them in branches is likely to lead to a new round of fierce competition with the Big Four clearing banks.

Engineers accept 16%, but PO still disrupted

ALTHOUGH the 129,000-strong Post Office Engineering Union has accepted a management pay offer of about 19%, so removing the threat of strike action by that part of the workforce, none of the remaining unions has accepted.

The pay and regrading dispute by members of the Society of Civil and Public Servants and the Civil and Public Servants Association is now into its third month.

Estimates of the telephone billing backlog put it near £600 million, although the Post Office has been able to recover some revenue by manual billing. But an SCPS spokesman explained that this has now run into difficulties.

"Computer operators are no longer running all online payroll applications at the Leeds and Harmondsworth computer centres," he said. "So the Post Office has now had to transfer some of the staff doing the manual billing over to a manual payroll system."

While the Post Office may eventually recover all the outstanding phone bills, it is suggested by the unions that there will be a total write-off resulting from interest charges and other transitory financial commitments of about £30 million.

Strike by specialist technicians

FIGHTING for pay increases of between 35% and 42%, the Institute of Professional Civil Servants this week pulled out 18 communications technicians from the Whitehall Communications Centre in a bid to put further pressure on the government.

The technicians are believed to handle nationally important communications with Polaris submarines and the NATO fleet.

Other areas that could be affected by the dispute include the Inland Revenue computer at Cumbernauld, and the Public Services Agency computer at Hastings. Both of these face a complete shutdown if any hardware failures arise, because IPCS staff who normally maintain the systems are out on strike.

"If the main electric power fails and either system goes over to back-up power, there will be no one to perform the proper readjustments," said an IPCS spokesman.

The only pay offer so far, of between 15% and 20%, has already been rejected.

'No pay rises for us, then none for you' say health authority ops

TIRED of waiting for their pay rise to come through, operators at the West Midland Health Authority have taken matters into their own hands.

In protest, they are refusing to do special back-pay runs for Authority employees who have already received pay awards. The operators are backed in this action by the local branch of their union, the National Union of Public Employees.

One of the operators said: "Eight or nine sections of the health authority have already got their rises, but the administrative and clerical section hasn't.

"We wanted to find a way of showing how we feel about the matter without doing too much damage. This seemed the best way."

Those affected by the action of the 13 operators include West Midland ambulancemen, blood transfusion operators, and hospital maintenance staff. All await over £200 in back pay. Further action is threatened if the operators' pay rise has not materialised by July 31.

One of the operators said: "If that is the case, we will refuse to run all new pay award jobs, in addition to the back-pay work. The doctors' award should be the next to come through."

A spokesman for the WMHA said: "The matter is out of our hands because the Whitley Council tells us what to pay our employees. There are a lot of us who are still waiting for a pay rise."

According to Roger Poole, assistant national officer for NUPE, the reason for the delay is two-fold:

Firstly, there is an "historical link" between pay levels in the Civil Service and the administrative and clerical section of the health service. As a result of this, progress was held up by the Civil Service pay dispute which ended in May (CW, May 10).

Secondly, pay offers to staff in the public sector must now be approved by government committees before being put to the union concerned.

Said Poole: "The health authority management is still going through this process for administrative and clerical staff. That is why they have been unable to put their offer to us at the Whitley Council."

BTI in Brum

BIRMINGHAM is now the location of the UK headquarters of BTI Computer Systems, subsidiary of the US-based interactive systems manufacturer, Basic Timesharing Inc of Sunnyvale, California. The firm's Birmingham distributor, Kalamazoo Computer Systems, has already installed 15 BTI systems.

HAMILTON

For sale or rent.

TERMINALS	Monthly rental 3 months	6 months	12 months	SALE
DIGITAL				
LA34 DECwriter IV	87	65	55	875
LA36 DECwriter II	87	65	55	875
LS120 DECwriter III	135	99	85	1785
LA120 DECwriter III	160	115	95	1695
LA180 DECwriter I	120	96	80	1599
VT52 DECscope	86	64	54	
VT100 VDU	95	64	54	1069
VT132 VDU	116	85	70	1299
TEXAS				
733 ASR	180	135	105	2250
743 KSR	101	74	51	1105
745 Portable Acoustic Coupler & EIA	130	99	74	1395
763 KSR 20K Bubble Memory	180	134	104	2195
765 Portable 20K Bubble Memory	210	155	119	2395
810A Printer	145	118	89	1650
820 KSR	170	120	100	1780
HAZELTINE				
1400 VDU	50	38	31	660
1500 VDU	72	54	45	785
1510 VDU	80	58	50	880
1520 VDU	90	70	59	1080
TECHTRAN				
950 Floppy Disc Unit	85	65	55	[illegible]
951 Floppy Disc Unit	105	75	65	[illegible]
8421 Dual Cassette	136	102	87	[illegible]
815 Single Cassette	58	44	37	[illegible]
MIOLECTRON				
M22 Reader/Punch Unit	84	63	52	[illegible]
DIABLO				
1620 Hyterm	186	140	117	[illegible]
1641 Hyterm ASCII/IBM 2741	216	162	135	[illegible]
LEAR SIEGLER				
ADM 3A VDU	54	40	36	[illegible]
TELETYPE				
Model 43 Printer	96	72	60	[illegible]
HEWLETT PACKARD				
2621A VDU	85	65	55	[illegible]
2621P With Printer	148	112	95	[illegible]
2635A	196	147	123	[illegible]
2641 APL/ASCII	240	180	150	[illegible]
2645A	208	156	130	[illegible]
2647A	475	356	298	[illegible]
2648A Graphics	320	240	199	[illegible]

GRAPHICS DISPLAY TERMINALS	Monthly rental 3 months	6 months	12 months	SALE
TEKTRONIX				
4006-1	200	150	111	
4010-1	323	243	212	
4012	424	317	277	
4013 ASCII/APL	457	342	300	
4014-1	760	571	523	
4015-1 ASCII/APL	829	622	567	
4016-1	1311	945	790	
4631 Hard Copy Unit	287	210	189	
4662 X-Y Plotter	256	200	181	
4663 Interactive Plotter	625	469	403	
4954 Graphic Tablet	347	260	[illegible]	
4027 Colour Graphics Terminal	561	420	365	
4051 Graphic Computing System	389	292	257	
DESK TOP COMPUTERS				
HEWLETT PACKARD				
9815S	222	158	140	2354
9825A	320	239	210	3536
9830	450	290	240	[illegible]
9835A	525	395	360	6070
9845S	1160	870	725	12040
9862A X-Y Plotter	221	162	135	[illegible]
9866B Thermal Printer	216	162	135	[illegible]
9871A Printer/Plotter	240	180	150	[illegible]
9872A 4 Pen Printer/Plotter	288	216	180	[illegible]
9874A Digitiser	325	250	210	[illegible]
9875A Dual Tape Cartridge Drive	185	125	105	[illegible]
9876A Thermal Printer	198	148	126	[illegible]
9878A I/O Expander	68	51	43	[illegible]
9885M Flexible Disc Drive Master	221	165	139	[illegible]
7246 Thermal Plotter/Printer	260	195	160	[illegible]
MINI COMPUTERS				
DIGITAL				
PDP11/V03	596	429	357	[illegible]
PDP11/T03	1075	791	659	[illegible]
PDP11/34	1532	1149	1053	[illegible]
WORD PROCESSORS				
DIGITAL				
WD78 Dual Floppy Disc, VDU, Printer, Communications	750	575	475	[illegible]
WD212 Multi-Terminal, Shared Facility System			1122	[illegible]
TYPEWRITERS				
IBM 895	54	40	34	[illegible]
Sperry Remington SR101	52	38	32	[illegible]

All prices quoted exclusive V.A.T.

HAMILTON RENTALS SERVICE SALES

Telephone: 01-450 8900.

PARIS 1.581.00.20 · BIRMINGHAM 021-236 3561 · MANCHESTER 061-848 8338 · ABERDEEN 0224 25301 · CEN. SCOTLAND 0501 43192

Computer Diary

Meditation en masse

YOU will have heard of Cottage Industry Computing, but how about Stately Hume Industry Computing?

The other day I went out to Mentmore Towers in Buckinghamshire, the magnificent Victorian pile built by the Rothschilds and recently bought by the Maharishi Mahesh Yogi and his crowd, transcendental meditation for the purpose of.

The house is now inhabited by 80 fresh-faced young men (no robes or sandals — dinner jackets were the order of the evening) who constitute the World Government of the Age of Enlightenment for Great Britain. Our host was the Minister of All Possibilities — Research and Development, who explained that meditation brings the mind to the vacuum state of quantum physics, which contains all possibilities and where we can tap the infinite organising power of nature.

This development of the technology of pure consciousness leads to mastery of the laws of nature, enlivens the field of infinite correlation, and reduces collective negativity. (I hope you are following all this.)

It turns out that if you get enough meditators all together in one place — a sort of critical mass of meditators — peace descends on the community and all terrorists, guerillas, and oppressors lay down their arms. Harmony, creativity, and happiness reign. Hence the Age of Enlightenment.

To achieve this admirable aim, everyone is busily learning to meditate, but sadly in the meantime money is required to make ends meet. So it has been decided to go into business writing computer programs. To this end a Pet home computer has been bought, and there indeed it was, sitting in the corner of the Grand Hall, freshly unpacked.

"We have learnt Basic," one of the meditators told me, "and a friend is coming out to teach us APL."

What exotic programs are they going to write, I asked. "Oh, small business systems — stock control, payroll, that sort of thing."

Your new application programming team.

For disbelievers

MY colleague Martin Banks, recently returned from the IMMM show in Geneva, tells me there was consternation among visitors who were hoping to catch a glimpse of the wares of one of the firms listed in the catalogue, Patrick Computer Systems of Winnipeg, Canada. They went round to the stand, number 632 in the Palais des Expositions, only to find it completely bare.

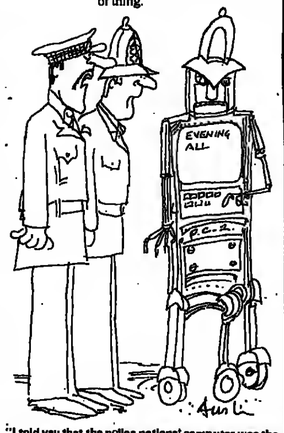
Martin assumed that the firm had just not turned up. I pointed out to him, though, that Patrick Computer Systems' star product is a small business machine called Leprechaun.

Now, everybody knows that just because you can't see a Leprechaun, *doesn't mean it isn't there.* I can assure disappointed visitors that Patrick and his pals were eagerly waiting for your custom, and if only you had put your trust in them and their little green machine you could be arriving at your office in the morning to find all your sales ledgers and invoices neatly done for you. Shame on you for not believing.

Hardware—Disney-style

I USED to think that we computer people had our bizarre terminology largely to ourselves, so I was a little miffed to discover that in the US amusements park business — Disneyland, Magic Mountain, Knotts Berry Farm and so forth — hardware is things like roller coasters.

They have their own software too. Turns out that software is variable entertainment — drum majorettes, black-face minstrel shows, whey-faced folk groups etc.



"I told you that the police national computer was the thin end of the wedge."

Disc drive challenge for IBM H-series

AN alternative to the high capacity disc drive, code-named "Whitney", that IBM is expected to introduce with the projected H-series of large scale systems, is being developed by Storage Technology, according to the company's chairman, Jesse Aweida. Storage is also bringing out a disc subsystem for 4300 machines.

According to Aweida "Whitney" will have a capacity of 1.2 Megabytes per drive, nearly four times the capacity of the 3350 drive.

Aweida said that the high capacity of the "Whitney" drive would be achieved by a dramatic increase in linear recording density to at least 12,000 bpi, twice the existing maximum.

But the number of tracks per inch was expected to be only 760, actually less than the track density on Storage's 8650 drive which records at 957 tpi. The 8650 stores 635 Megabytes on each spindle.

Apart from the high recording density of "Whitney", another significant technical feature was expected to be two read/write head actuators per pack.

Looking a bit further into the future, Aweida said that capacities of 3,000 Megabytes per spindle would be available within five years.

Much nearer in the future Storage will be launching an alternative to the 3880 disc subsystem that IBM introduced with the 4300 machines early this year (CW, February 8). The

AWEIDA . . . high capacity achieved by a dramatic increase in linear recording density.

3880 supports the 3370 drive which stores 570 Megabytes per spindle.

Aweida pointed out that Storage's 3860 compatible system would essentially be a by-product of the company's development of a "Whitney" alternative, but he saw a growing market for Storage Technology among so called medium-scale IBM system users now that the power of such systems was so much greater. Traditionally Storage has tended to concentrate on users of big systems.

A relative late comer to the plug compatible disc drive market, Storage Technology claims to now have about 70% of the total business worldwide for drives that are software compatible with the IBM 3350. The company now has marketing subsidiaries in most parts of Western Europe.

● The 3880 can now be attached to IBM 370 and 303X machines but it will only support the older 3340 and 3344 drives on those systems, not the 3370. So the 317.5 Megabyte per spindle 3350 is still the biggest IBM bulk drive that can be used with IBM's large scale systems. On 4300 systems the 3880 will support the 3340, 3344 and 3370.

Back-end database launch

THE back-end "database" system, VSS, being developed by Storage Technology for IBM users (CW, March 22) will be formally launched later this year according to the company.

Storage Technology is developing its own IBM compatible 32-bit processor for VSS which will use magnetic tape type addressing to access data from banks of high capacity Storage Technology disc drives.

VSS will also feature a high speed cache memory using charge coupled devices. Storage pioneered the use of CCDs in its 4305 solid state disc, a faster and cheaper alternative to the IBM 2305 fixed head disc drive (CW, November 2, 1978).

Hobby club hears of S-100 multiprocessing capability

THE standardised version of the S-100 personal computer bus to be published shortly by the Institute of Electrical and Electronic Engineers in the US (Micro News, July 5) will have 24 address lines, 16 bi-directional data lines and enable 16 processors or direct memory access devices to contend for the bus by having their priority levels decoded on to four bus lines.

A simple interface, called Microbus, will enable any type of device to attach to the bus in a standard way via a single cheap dedicated ULA, uncommitted logic array, which will contain a fuse array to protect the bus from overloading.

A crossover multiplexer is also specified that enables both eight bit and 16 bit processors to access the same memory blocks. This passes 16 bits across in parallel as well as multiplexing the low order byte on to the high order byte lines, which is catered for in the control signal timing and is derived from a single phase bus clock.

The S-100 specification was part of the full programme arranged for the last meeting before the summer break of the North London Hobby Computer Club held last week. It was presented by Kelin Elmquist, chief design engineer for Ithaca Audio in the US and a member of the IEEE S-100 standardisation committee.

He also told the 100 club members present that a further committee had been set up to consider future bus structures, to cater for 32 bit and larger processors, directly accessing more than the 16Mbytes addressed on the current specification, and catering for multiprocessing with more than 16 devices. This would probably involve multiplexing signals on the bus.

A film was also shown at the meeting which was made by IBM to show its UK sales staff what personal computing is all about. It had been given to the club because it featured on interview with Robin Bradbeer, one of the club's founders.

The main theme of the film is the Californian scene, showing computer education in high schools, with four machines to a class in one school while another school has one machine between two students.

An early pattern of bussing children to computer centres has changed in favour of bussing microcomputers between schools, and a feature of several schools is last session's students becoming this session's tutors and consultants.

The club meeting was also given a demonstration of a Rockwell Aim 65, 6502-based microcomputer with keyboard, 20 character LED display and 20 column printer on board. The £250 micro has five 2K ROM sockets, two of which contain the monitor with keyboard and printer routines and three are available for options such as the £60 two pass assembler.

Because the printer is driven from ROM, it can be programmed to print Arabic characters or graphics. Interfacing is via a 16 line VIA, versatile interface adapter chip, which also drives a serial line at speeds selectable from 110 to 9,600 bps.

A £20 homebuilt RCA Cosmac Elf followed, shown by Joe Cunningham who has started a Cosmac Usara Club, which has 13 members so far. Based on the RCA 1802 processor chip, the machine uses LEDs and switches for output and input as well as a hexadecimal keyboard and TV display.

The NLHCC is planning to buy several of each machine in its next season.

Finally a Lesney remote control car was shown, which uses two Texas Instruments TMS 1000 4 bit processors: to implement the nine commands that can be transmitted from the keypad to the car by modulated infrared radiation.

The car costs £23 — and there are 141 shopping days to Christmas.

● Plans were announced for the next season starting at the end of September, when the club will become a class, with courses given for business users and hobbyists as well as software workshops using the Polytechnic of North London's DECsystem-10 computer and other machine structures on similar lines to those the Polytechnic's management will be open to all and students at the

NCC's commercial business up 35%

AN increase of 35% in business with the general computing community, as opposed to the government, is one of the more significant aspects of the first annual report from the National Computing Centre since it changed its constitution last year. The report covers the 1978/79 year which ended on March 31.

Memorex complaint to EEC 'unfounded'

—SAYS IBM

"UNFOUNDED and without merit" is the way IBM has described the anti-monopoly complaint being made to the EEC Commission by Memorex.

The plug-compatible peripheral supplier wants the EEC to outlaw IBM's practice of not releasing interface data for new peripheral products until the first deliveries of the kit take place.

The same interface issue loomed large in the Mamorex anti-trust case against IBM last year in the US and the case ended in the judge giving a directed verdict in favour of IBM. Memorex is now appealing against this verdict.

In Europe, Memorex is claiming that the IBM practice infringes the anti-monopoly articles in the Treaty of Rome.

A statement issued by IBM on the Memorex complaint to the EEC Commission says, "As we have not been informed by the Commission of the details of the complaint, we cannot comment on specific allegations. However, based on Press reports of the issue seemingly in question we can say that it appears to be the same issue raised by Memorex in its unsuccessful litigation in the US.

"We, therefore, consider the allegations as reported unfounded and without merit."

IBM scored a further success in the US late last month when another anti-trust opponent, Calcomp, lost its appeal against a directed verdict, brought in two years ago, that there was no case for IBM to answer (CW, February 17, 1977).

● In another issue involving the EEC Commission, IBM is insisting that it would be violating articles 75 and 76 of the Treaty of Rome if it revealed its prices to third party lessors of IBM equipment. These articles are concerned with anti-competitive collusion between companies, in particular with price fixing.

However, the European Computer Leasing and Trading Association, Eclat, believes that IBM would not be violating the Treaty if it made its price lists available; and Eclat is currently trying to obtain official confirmation from the EEC that this view is correct.

First 4300 benchmark figures

THE first set of benchmark figures for IBM's new 4300 series compiled from IBM information, have been published by Advanced Computer Techniques Corp.

Most striking finding is that the Extended Control Program Support microcode enhancements on the 4341 can reduce supervisor time more than 80% under DOS/VSE and OS/VS1, and reduce the overhead imposed by VM/370 by about 40%.

On commercial applications, a 4331 fitted with the new 3310 disc drive offers between 0.85 and 1.0 times the power of a 370/138 using a 3330 disc, and a 4341 offers between 3.4 and 4.2 times the performance of the same 138. Running Fortran jobs, the 4331 matches the 138 and the 4341 is 8.2 times faster.

The better performance on scientific applications is not surprising in the case of the 4331, since commercial jobs tend to be much more input-output-bound, and on the 4331, input-output activity is handled by integrated channel adaptors which steal processor cycles.

The full report is available from ACT at 437, Madison Avenue, New York 10022, US.

The NCC's income in the form of development contracts from the government's Computers, Systems and Electronics Requirements Board was just over £1 million in 1978/79, almost the same as in 1977/78, but as a proportion of total income it fell from 37% to 30%.

In contrast to this lack of growth, income from other areas jumped from £1½ million to £2 million. Income from training services increased from £600,000 to £770,000, while sales of software products leapt from just over £400,000 to nearly £700,000.

The operating surplus chalked up before corporation tax in 1978/79 came to £259,000 compared with £216,000 the year before, although the surplus after tax was less — £62,000 compared with £118,000 in 1977/78. The Inland Revenue adjusted the tax upwards to £177,153 in 1978/79 because the £100,000 paid in 1977/78 was a lot less than the 52% of operating surplus that should have been paid.

The NCC's change from a grant-aided organisation to independence was completed last year. Its governing body changed from a council to an industrial type board of directors.

Maintenance deals

ICL System 4/70 and 4/72 systems at the Universities of Cardiff and Exeter are the subjects of maintenance contracts won by the independent maintenance company Data Processing Customer Engineering. DPCE says that it is now holding discussions with a number of other important Systam 4 users.

Univac's plans for back-end database processor

FOLLOWING the announcement of the 1100/80 bit-slice mainframe (CW, June 14), more clues have emerged about the nature of Univac's forthcoming back-end database processor. The company is applying the technique used in the 1100/80, that of assembling multiple bit-slice processors and running them in parallel in order to get desired performance, in the database processor.

Univac's plans for a back-end processor combining features of network and relational databases were first revealed in Computer Weekly at the beginning of the year (CW, January 4).

The company is working on a back-end database with a DMS-1100 interface, which combines the best features of Codasyl, network and relational databases, with the common features microcoded.

It appears that the back-end system will have two levels of processor: the database processor itself, and additional intelligence within the memory to improve further the speed and efficiency of accesses to data.

SEEN here with the contract that will take a range of DEC-based small business systems from Plessey Peripheral Systems on to the high streets are Mike Stirling (left), general manager of the Plessey division, and Bill Cannings, managing director of the Byte Shop chain of retail outlets which will now be selling the systems (CW, July 5).

Computers and electronics growth at GEC and Plessey

YEAR-END figures from the two British electronic giants show pre-tax profits up over 18% at GEC, but only 7.9% at Plessey.

Both companies close their books on March 31, and GEC recorded pre-tax profits of £376.4 million on turnover up 8.7% at £2,500 million. The Electronics, Automotion and Telecommunications group was a star performer, with profits up over 32% at £101.2 million on turnover up 28% at £862 million. This division is more than twice as big as the next largest, and the figures include sales to other GEC companies.

Plessey's 7.9% profit improvement at £48.2 million was made on a growth in turnover of 8.1% to £846.3 million, and would have been £2 million higher but for the rise in the value of sterling against the currencies of most of the overseas countries where Plessey trades.

Profit figures were also hit by two troublesome operations. The Garrard record changer business lost £2.6 million, and the Strowger Exchange factory at Edge Hill, Liverpool, lost £3 million.

As a result, the £7.5 million profit made on the £33.5 million sale of Plessey's 24.42% stake in ICL was more than wiped out.

Growth in Plessey's computer-related activities, categorised as office, data and control systems, was dramatic profits rose 16% to £9.08 million, 20.3% of the total, on turnover up a formidable 56% at £104.9 million, where they represent 18.2% of Plessey's turnover. Electronic Systems and Equipment, also increasingly involving computer-based products, was the biggest single profit contributor, providing 35.8% of the total at £15.8 million on a turnover of £179.2 million.

Amdahl strong despite profits fall

ALTHOUGH the figures for the second quarter due from Amdahl next week are expected to show a dramatic decline in profits, the setback is unlikely to do the company any serious damage, and the fall in the share price from a 1979 peak of $71 to the mid $20s is almost certainly overdone.

The more important figure will be that for computers installed, and the company says that shipments are likely to be at a record level.

The reason that profits will be hit is that 40% of customers are opting to lease rather than buy their machines, and leases do not start to generate profits until well into the leasing term.

However leased machines are a valuable asset to Amdahl, and if the company began to run short of cash, it could raise money by selling an interest in its lease base. So far it has not done so, because the prevailing high interest rates in the US would make it unattractive. It could well change its mind if, as expected, interest rates begin to fall later in the year.

The setback was fully anticipated by the company. Asked about the cash reserves Amdahl was building 18 months ago, Dr Gene Amdahl told Computer Weekly, "We are offering leases, and not many have been taken yet, but if that changed, the cash position would alter very quickly."

Itel's problems in the plug-compatible market are much more severe than Amdahl's, since Itel has been hit by a decline in demand for its AS machines, whereas there has so far been no slackening in demand for Amdahl's 470V line.

Christmas launch by Motorola

A NEW microcomputer development system that has a specification not untypical of a small business system, is expected to be launched at Christmas time by Motorola.

The system, called Exorset, is being designed as a development system for the 6809 microprocessor. This 16-bit internal architecture, 8-bit bus device has now entered the sampling stage with customers, and is expected to find considerable application in both industrial control and small business equipment.

Based on a 6809 processor itself, the Exorset incorporates a large video display, dual mini-floppy disc drives, and has a semi-compiled Basic, held in ROM in the system. In the US it is expected to cost about $4,500.

Motorola stresses that it will only be marketing the Exorset as a development system.

Three-year payback

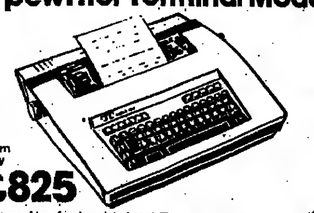
TRIALS of a small Logica shared-logic word processing system at the Leeds Permanent Building Society, with detailed consideration of productivity improvements and operating costs, have led the Society to conclude that the system will pay for itself within three years. As a consequence, a full installation Unicom system is being purchased from Logica VTS at a cost of £88,000.

The workload for the trials, which were held in the Society's head office in Leeds, consisted partly of one-off letters and memos and partly of documents constructed from standard paragraphs. Gains ranging from "worthwhile" to "substantial" were obtained with both sorts of work.

Cost estimates described as conservative, dealing with staff and equipment charges, overheads, cash flow, and so forth, led O&M staff to reach the figure of a three-year payback.

Teletype 43 SuperDeal - New Products+Special Prices

Typewriter Terminal Model



From only £825

Two machines for the price of one! Typewriter-style friction feed for single documents, letters etc. Pin feed for 132 column continuous feed business stationery. Many electric typewriter features. 9-wire matrix head for exceptional print quality.

New Product

Pin Feed Model

From only £799

New Price

Portable Model

From only £870

New Product

Friction Feed Model

From only £818

New Price

Options
- £ Sign
- Form Feed
- Automatic New Line
- ESC Code suppression
- Auxiliary Port
- IEEE 488 Interface
- Pedestal

New Features

PERIPHERAL HARDWARE LIMITED
Armfield Close, West Molesey
Surrey England Telex 922175
Authorised UK distributor

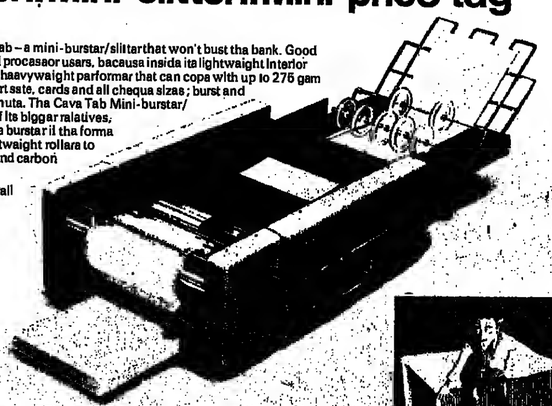
South 01-941 4806 North Wetherby 61885 Ireland Dublin 971854

Mini-burster.. Mini-slitter.. Mini-price tag

Introducing the latest from Cava Tab – a mini-burstar/slitter that won't bust the bank. Good news for mini-computer and word processor users, because inside its lightweight interior (it tickles a tha scales at 40 kgs) is a heavyweight performer that can cope with up to 275 gsm forms. Lightweight forms, four-part sets, cards and all cheque sizes; burst and slit at speeds up to 200 feet per minute. The Cava Tab Mini-burstar/slitter has all the special features of its bigger relatives, including detectors which stop the burster if the forms are not stacking properly, and lightweight rollers to eliminate tracking on carbonless and carbon multi-part forms.

Proof that good things come in small packages (and sometimes with small price-tags!)

So, call Cava Tab now on Northampton (0604) 46125, and ask for a demonstration.



Cave Tab

5 Tantar Road, Moulton Park, Northampton NN3 1PZ.
Tel: Northampton (0604) 46125

In 10 minutes Cava Tab can show you how to get on top of your computer output.

MICHIE'S PRIVATEVIEW

Robots, hermits and harlots

OUR new Ambassador to Washington, Sir Nicholas Henderson, has lamented the continuing industrial decline of Britain. Other voices warn of our role as Europe's new peasantry, and have commented on lack of national fire and will.

BBC Horizon's recent "The Robots are Coming" jolted us anew with statistics of programmable robots pouring into Japanese and American manufacturing industry, and to a lesser extent into the factories of our European competitors. Some 4,000 Japanese robots are already at work, largely in the car industry: in British Leyland, only a handful have been purchased and these are for technical assessment only. None are doing actual jobs.

The screen showed Engelberger, the buoyant founder of the world's largest producer of robots, Unimation Corp. He smiled in rueful sympathy at our parlous state.

Why are industrial robots not being introduced here? His answer was one-sided but convincing. He blamed managerial timidity. As for the trade unions, he had seen little signs of significant opposition from that quarter. Further, British management was so scared to mention such topics to the work-force that they were not in a position to know what the shop-floor attitude might be.

To complete this picture, mention should also be made of government policy, or non-policy, which allows Britain's annual rate of investment in re-equipping industry to drift at about half that of the rest of the advanced nations. Surely the know-nothing management tradition, impervious alike to governmental and trade union scolding, might yield to a sufficiently steep scale of exemptions and premiums built into company tax legislation?

Engelberger also made the point, based on US experience, that to be displaced by a robot from a boring and dirty job is not so bad if the worker ends up supervising a robot team.

Of course there has to be a net reduction of working hours. But how welcome, said an ASTMS spokesman on the same programme, if that could be managed in such a way that we spend less time doing *what we have to do and more time doing what we want to do!*

Some years ago a former Lord Provost was so moved by this thought that in his retirement speech he mis-spoke himself to immortal effect.

"I'll be away now to the far highlands," he informed the solemnly assembled company "where I plan to live the life of a harlot!"

Historians of the occasion now believe that the intended word was "hermit." Yet as Freud was the first to emphasise, these slips can reveal hidden attitudes. Doubtless in a Scottish Lord Provost's secret mind, doing quietly what one wants to do is not filed, as it would be in the mind of a Catholic or a Buddhist, under "RETREAT, SAINTLY" but rather under "IDLENESS" — with all the degeneracies and depravities into which that devilish state may plunge even the best Presbyterian!

Truly, there are many breeds of men. But many more are the mythologies which they cherish about each other. The following is from a book to be found in school-rooms: "They are lazy individuals, apparently devoid of morals, and always prepared to lie, cheat and steal."

Whose conversation are we overhearing? Perhaps it is a data processing manager letting his hair down about maintenance staff. Or is it a board member at Dagenham grousing about the work-force? Yet it could just as plausibly be one of the shop stewards on the subject of the board! Maybe it was overheard in the Athenaeum, and the target was the new Ministers of the Crown? And yet it sounds not unlike the late Richard Crossman writing about senior civil servants. Or in the groves of Academe: "Tell me, young person, what are the Professors like round here?" Or "You were saying, Dean, about the students ..."

Let me reveal that the statement is from a New South Wales textbook. It refers to the Australian Aborigines. Textbooks are purportedly sources of knowledge. This circumstance starts in my mind a train of uneasy thought.

A more dynamic knowledge-source than any textbook is arising in the form of computer-based "expert systems," of which SRI International's PROSPECTOR is an impressive example. One of PROSPECTOR's areas of expertise is the geology of uranium. As it happens, political tension exists around the discovery of uranium deposits lying beneath the Aborigine's traditional habitats.

PROSPECTOR's knowledge, of course, does not at present extend to non-geological factors which might affect decisions to drill. But for Son of PROSPECTOR or Grandson of PROSPECTOR the picture will be less clear. It is not beyond possibility that such a system might incorporate relevant legal information concerning Aborigines and land rights. Beyond that, the proprietors of automated systems may wish to add to the knowledge-base more than dry technical and legal facts, and to include some looser generalisations about relevant human groups. Questions of social accountability of stored "knowledge" will certainly then arise.

Equally certainly, impartial study of human history and politics should (but will not fully) prepare the mind of A. Bloggs, twenty-first century supervisor of robots. Leaning forward expectantly, he types to SUPER-ROB, the aptest and most perceptive member of his team: "What's lazy, apparently devoid of morals, and always prepared to lie, cheat and steal?"

Super-Rob's reply? ... You've guessed it: "*Homo sapiens.*"

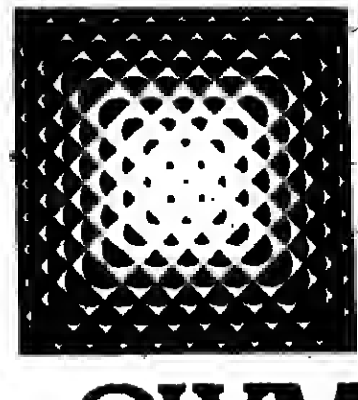
Donald Michie

REFERENCES

1. "A Culture Underrated" by Nikki Knewstub. Article in the Guardian June 2, 1979.

Britain's BIGGEST Computer Exhibition

COMPEC'79



COMPUTERS... SMALL COMPUTERS...
PERIPHERALS... SMALL BUSINESS SYSTEMS...
SOFTWARE... MINIS... MICROS...
TERMINALS... SOFTWARE

OVER 350 EXHIBITORS AT

OLYMPIA, LONDON

NOVEMBER 6, 7 & 8 *from 10 am each day*

Admission is £2 if you register on arrival, but FREE pre-registration tickets are yours if this coupon reaches us by October 15.

COMPEC '79 tickets
Room 821, Dorset House,
Stamford Street, London,
SE1 9LU England.

Please send me ... FREE pre-registration tickets for Compec '79

USE BLOCK LETTERS. WRITE WITHIN SPACE

A

Name
Street & No.
Town & Post or zip code
Country

PROGRAMMER NOTES

The First Law of Computing is that a program is never finished

THE claim that a program is 99% complete is only rarely an outright lie, but equally it hardly ever means that a job which has already taken 99 days will be finished in another one.

Instead, what it often means is that a way can be seen to finishing the software which does not entail major redesign.

Such optimism may or may not be well-founded, but should in either case be treated with some caution; it may well signal that the programmer regards his involvement as ended and is itching to get on to a new assignment.

In practice, of course, what often happens is that pressure of other work means that the programmer's wishes in this respect are met. The program he was previously working on, still "99% complete," then slides gracefully from development status into a maintenance phase.

How often is it, then, that a program is actually completed?

Given the preceding discussion, it will perhaps come as no surprise that the answer made by one leading researcher is "never." However, the reasons he gives are fundamental rather than anecdotal.

The fact that a program can never be finished is the "First Law of Computing," according to Professor Manny Lehman, of Imperial College, London, and stems from the fact that a program is always a model of the real world.

"This is intrinsic to a program," he noted, "and it means that software can never be perfect. You can never keep up in your software with the changes that are occurring in the real world.

"Besides, the very introduction of a computer system changes the world that its component programs are supposed to be modelling. So it's inevitable that it will be immediately out of date.

"In the context of banking, for example, customers are restricted to conducting transactions between 9.30 and 3.30. However, if you introduce automated equipment, the pattern of bank use will undoubtedly change, possibly in ways very hard to predict.

"A system designed to handle current workload patterns could for instance turn out to be both over-equipped and unsuitable when customers adapt to the new freedoms.

"Another way of putting it is that the statement of requirements for a system will probably be out of date as soon as it's implemented — if not before. Yet requirement documents are hardly ever updated once a system has gone live."

One lesson that Lehman draws from all this is that changeability is one of the most important properties of a program.

"Structure has no value in itself," he says, "except in so far as it improves changeability. Unfortunately, while it is clear that to invest in changeability is worthwhile, just how one sets about it is still a research question."

Puzzler

ON the occasion of his daughter's marriage, a sporting squire gives the happy couple a plot of land, to be selected by them from his vast estates. To test their business acumen, he specifies that the plot be bordered by four straight sides with respective lengths of 1, 3, 8 and 8 furlongs and that they themselves should decide exactly what shape it is to be.

How should the newly-weds plan their boundaries, in order to maximise the area of the plot? What shape is best, and how many square furlongs will then be enclosed? Does the order of the sides matter?

See page 45 for solution.

Three more ops for Asas

THREE further North American customers have been found for Asas, the finite element system developed by Atkins R&D. Two Canadian Department of Defence sites have leased the software, for use on Xerox ... DECsystem 20 equipment ... the third customer (Tulane University, New Orleans) ... DECsystem 20 user.

SOFTWARE FILE

By Peter Hewitt

Pre-release specs wanted from IBM

STILL smarting over the lack of pre-release information on DOS/VSE, which has until now prevented them from updating system software packages for use with the new operating system, software houses are optimistic that the problem will be alleviated in future via an extension to the Software Information Exchange Program launched late last year (Software File, January 11).

The proposals, to which IBM is understood to have agreed in principle and which are supported by Adapso in the US and by the CSA in the UK, call for IBM to provide more advance information on future software products.

What is envisaged is that software houses should be able to obtain full documentation on programs that have gone to alpha or beta sites, gaining a lead of perhaps one to three months before the software is fully released.

Participating companies would be required to pay the standard monthly licence fee for the program product, receiving everything apart from the program itself.

Companies could subsequently return the documentation, having paid licence fees only for the months for which they held it.

Currently, the information exchange programme only gives to software houses information that is already freely available to IBM users.

In the case of DOS/VSE, this has meant that companies are only now receiving the detailed specifications they need to implement native mode versions of their products on the 4300.

Thus in many cases where 4300 implementations have been promised, it will still be some months before they become available.

The delays, which mean that early DOS/VSE sites are at the moment unable to use proprietary products interfaced intimately to DOS/VS, are naturally aggravating to both suppliers and users.

Combined with the lack of full functional specifications for many DOS/VSE components, they have led to a general uncertainty in the market, with potential purchasers reported by some to be holding back.

Hourds to market Sort-1 enhancement

AN enhanced version of the OMSI Sort-1 package for DEC PDP-11 users running under RSTS/E is being marketed by Hourds Computing. Called OMSI Sort-1-Plus, the software runs in 16K words and is priced at £475.

Features of the package include the ability to sort up to 16 million records, each up to 512 bytes long, with as many as 15 specified sort keys. Key fields may be alphanumeric, integer, decimal, or single or double precision floating point.

Seen as a complete replacement for DEC's V08-01A package, the new version also permits spanned records.

Infonet addition

A FINANCIAL modelling system called Sofi (Simulation of Financial Institutions) has been made available by CSC on its Infonet service. Said to be designed specifically for financial experts, the package is interactive and includes its own database and 3-D graphics facilities.

Johnson to sell OS prod control system

A HIGHLY regarded production control system for IBM OS installations is to be marketed in this country by the newly-formed UK subsidiary of Johnson Systems (Software File, July 5).

The system, Apex, is already marketed by Johnson in the US and West Germany and will be available here by Christmas.

Johnson obtained US marketing rights to Apex last year from the West German software house which developed the system, Sven, of Hamburg. At around the same time, European rights to the software — then known as Pecs — were acquired by CAP-CPP (Software File, December 14, 1978).

Johnson has since purchased the system outright and is thought to be waiting only for the CAP-CPP licence to expire before marketing the software here.

Production control packages are designed to improve the efficiency of traditional operations departments by automating such aspects as the submission of JCL and the initiation of dependent processing steps.

The best-known products in this area are probably the Value systems marketed in this country by RTZ Computer Services. A Johnson spokesman noted, however, that these were typically more ambitious than Apex, in that they aimed to load a machine according to a timed job schedule.

● Last week's story on Johnson's other main products, Jars (Software File, July 5) erroneously reported that Computer Associates had acquired Datachron, the developer of the principal competitor to Jars, Jasper. CA has acquired only Jasper, and is currently handling marketing and first-line technical support. Responsibility for second-line technical support and enhancement will be transferred to CA at the end of a hand-over period.

HP makes available its implementation language

ECHOING DEC's release to end-users of its VAX-11/780 system implementation language, Bliss-32, Hewlett-Packard has made available its equivalent facility on the HP300, called SL/300.

Like Bliss, SL/300 is a high level, block structured language intended to give much the same efficiency and control as assembler. It is the language in which all the HP300 operating system is written, including compilers and file and database management subsystems.

In support of its use for writing system software, it includes such features as dynamic array allocation; recursive and re-entrant procedures; bit-level manipulation; and task synchronisation.

It also supports a full range of data types; an extensive file system; and unlimited statement nesting.

HP anticipates that SL/300 will be used chiefly by programming specialists for tailoring application systems and by third-party program suppliers, such as OEMs.

● Indications that the MMS general ledger and financial reporting system was being adapted for use on minicomputers (Software File, April 20, 1978) have been followed by the release of a version for the HP3000. Written in Cobol, rather than in the HP3000 implementation language SL/3000, the software is marketed in this country by Package Programs and joins existing versions for the IBM System 3, ICL 2903, and IBM and ICL mainframes.

Recovery aid a feature of Cullinane's IDMS-DC

CONCURRENTLY with the release in the US of its teleprocessing monitor package IDMS-DC, Cullinane has announced record profits for the financial year ending on April 30, showing a growth of 56% over 1978.

Total revenues reached $13.9 million with profits of $1.6 million. The equivalent figures for 1978 were $8.9 million and $1.0 million respectively.

IDMS-DC, the nucleus of which became available last year (Software File, November 2, 1978), is fully integrated with IDMS itself, according to the company.

By bringing the two architectures together, it notes, such benefits accrue as more economical use of memory, greater simplicity of use, and faster response time.

It also helps in the area of recovery, where the use of separate DBMS and TP facilities can give rise to problems of incomplete recovery following a crash. In an integrated architecture, all work can be recovered in step.

The US licence fee for IDMS-DC has been set at $50,000 with a 10% annual maintenance charge.

● A rumour that Cullinane might be about to enter the UK market directly, displacing its long-term agent Scicon, has been firmly denied by the company.

A Cullinane spokesman said that the company had no such plans and registered "amazement and surprise" at the suggestion.

Cullinane trades through agents in most of Europe, including West Germany, but is directly represented in the Benelux countries through a subsidiary in Belgium.

Euro marketing review

THE European market for software packages and packaged computer services has been analysed in a 272 page study now available from Frost and Sullivan. The report covers the years 1977 to 1986, and is priced at $850.

Frost and Sullivan expects the total market to reach $16 billion a year by 1986, and to total cumulatively $85 billion over the period. Surprisingly perhaps, software packages themselves are predicted to account for less than six per cent of this business.

Professional services and bureau processing will take the largest share, accounting between them for 84%, with the rest being spent on timesharing.

The ABC of business management

Read what the Accounting, Business and Computer press say about CMC REALITY ROYALE.

REALITY ROYALE

1969 cmc 1979

Data Preparation
Distributed Processing
Business Systems

Please complete this coupon for any reprint likely to be of interest

☐ A (Local Government Finance)
☐ B (Sales Order Entry)
☐ C (Purchase & Supply)
☐ D (Stores Control)
☐ E (Management Statistics)

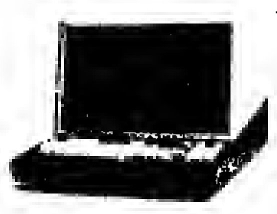
Name
Position
Company
Address

CW 12.7.79

Communications Manager,
Computer Machinery Company Limited
FREEPOST
Maxted Close, Hemel Hempstead
Hertfordshire HP2 7BR Telephone 0442 61266 Telex 825620

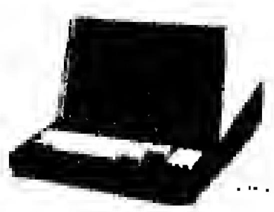
NEWBURY

SMART MICRO-BASED VISUAL DISPLAY TERMINALS



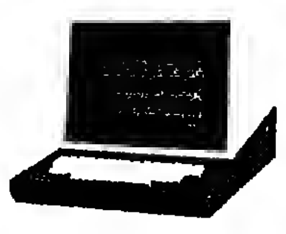
Model 7007-7009

- British design and manufacture
- Based on 8080A Microprocessor
- Two-page Memory 3,840 characters
- 24 Displayed line of 80 characters per line
- Switchable Transmission Speeds from 50 Baud to 19,200 Baud
- Split Speed Transmission Mode
- Dual Interface — CCITT V24 and 20/60 mA Current Loop
- Hard Copy Printer Output
- Protected Field Format — Blink — Background or Half Brightness
- XY Cursor Address (send and receive)
- Roll or Page Mode
- Video Output for External Monitors
- Full Character Editing Features
- Block Transmission from Screen by Line or Page
- Green Phosphor Non-glare screen



Models 7001-7002

- 24 Lines of 80 characters per line
- Selectable Baud Rates from 50 to 19,200 Baud
- Dual Interface — CCITT V24 and 20/60 mA Current Loop
- Teletype Compatible
- Hard Copy Printer Output
- Selectable Half or Full Duplex
- Video Output for External Monitors
- Green Phosphor Non-glare Screen



Model 7000

- Teletype Compatible
- 24 Lines of 80 Characters per line
- Selectable Baud Rates from 50 to 19,200 Baud
- CCITT V24 Interface
- Selectable Half or Full Duplex
- Green Phosphor Non-glare screen

PRICES FROM £495

NEWBURY LABORATORIES LTD HEAD OFFICE & SALES KING STREET ODIHAM

TEL: 025-671 2910
TELEX: 858815

Manufacturer:
Arnhem Road, Newbury, Berkshire RG14 5RU
Tel: 0635 48684
Service Centre:
Bone Lane, Newbury, Berkshire RG14 5SH
Tel: 0635 45898
Northern Area Sales & Service:
2 Bibby Road, Cheadle, Cheshire SK8 1PY
Tel: 061-491 0134

OP SPOT

By Bernard Allen

'Contract staff should not try to run the computer room'

IF the operations department is to provide the best possible service, it must take into account user requirements — which vary considerably from one company to the next.

As a result, sites which are similar in terms of hardware and software often differ considerably as regards their applications procedures.

This is why the suggestions of contract staff are seldom taken up, according to Barry Johnston, operations manager at Univac's West London benchmark centre.

Responding to comments made by contract staff at a meeting on contract work, held by operations staff agency Co-Operators (Op Spot, June 21), Johnson said: "Contract staff can't expect to walk into an installation and tell the operators how to run the system — it's just not on.

"Procedures vary so much from one site to the next. So the shift leader often can't apply what the contractor puts forward, even if he wants to."

According to Johnson, contractors should use the work as a means of broadening their experience of the industry, and then look to enter operations management.

"Rather than trying to tell shift leaders how to run the

Barry Johnson

work, the contractor should save his expertise until he becomes a manager — if management is what he wants, that is."

But, he pointed out, not all contractors are interested in career progression: "As one of the contractors at the meeting said — 'I'm only in it for the money'. It's a fact of life."

Johnson worked with contractors during his days as an operator at Shell Mex in Wythenshawe, Manchester.

"I always got on quite well with them and have no qualms about their ability. In fact, in some cases they are better than permanent staff."

But, speaking as an operations manager, Johnson pointed out that contractors don't always have the right attitude towards the work:

"There must be a question mark over their drive and approach — you can't expect them to take the same interest as permanent staff," he said.

His installation does not employ contract staff because of "the confidential nature" of the work carried out there, he added.

Ex-TOPS students seek work

THREE former TOPS operations students (Op Spot, June 14) are still seeking positions in the computer industry, according to Derek Pinnock, lecturer at Borehamwood College, Herts.

"As far as I know, they are all going through the interview

Derek Pinnock

process, but none has been offered anything suitable, as yet," he said.

According to Pinnock, those from Great Yarmouth and Basingstoke have their own transport and are willing to travel, but the one who lives in Luton would like a position somewhere near home.

The next TOPS operations course at Borehamwood College starts on September 10, and again, Pinnock will be looking for sites to take students for three weeks' practical training.

For further information, contact Derek Pinnock at Borehamwood College on 01-953 6024.

Make sure resources aren't wasted under IBM OS, with Modify

THE IBM OS Modify command is used by the operator to alter the function of system reader, writer and initiator procedures.

It is useful in that it sometimes saves the operator from having to stop and start procedures. The format of Modify varies in accordance with each procedure.

To ensure that system resources are not wasted, the console operator should keep a close watch on the input queues and the classes served by each of the system initiators.

If one of the input queues is particularly long, the operator should use the Modify command to alter the order in which the queues are served by one or two initiators. For example, should input queue "P" be the one concerned, he might enter the following commands:

F INIT1, CLASS=PAXY
F INIT2,CLASS=PXYA

After these commands have been processed by the system, input queue "P" will be given top priority by both INIT1 and INIT2.

Similarly, should input queue "T", for example, be full, the operator can modify a writer to deal with it. To that end, he might enter:

F 00E,CLASS = TXYZ

After this command has been carried out by the system, printer 00E will serve output classes T, X, Y and Z, in that order.

In relation to readers, Modify may be used to command the card reader to place jobs on the system hold queue. The command format is as follows:

F RDR1,TYPRUN=HOLD

This can be useful to operator and programmer alike at sites where an open shop form of job testing is employed (Op Spot, April 12). At such installations the programmers have access to a card reader, enabling them to feed their own work to the system.

Problems sometimes arise as the end of testing time approaches because the programmers are always keen "to get one more shot in", and the operators are, at least, equally keen to get them off the system.

A compromise is reached by modifying the reader as shown above. This enables the programmers to put their work on the hold queue for processing later in the day.

Don't blame the op for wavy-line printing

"IF the ICL 1933 printer produces wavy-line output it's the fault of the unit, so don't put the blame on the operator."

Thus Ron Linton, computer operations controller at Manchester Polytechnic, replies to comments from Gerry Mills, managing director of computer bureau Mills Associates (Op Spot, June 7).

Says Linton, "We have both an ICL 1933 and a 1932, and, as far as I can remember, we have always had trouble getting good print quality from them."

The wavy-line print listings sometimes produced by the units is due to the manner in which they work, he says.

"They are electro-mechanical barrel printers which print all the As in a line, then all the Bs and then all the Cs, and so on. You find that the paper has moved slightly between each character, resulting in wavy-line print."

Seminars on future developments

OPERATIONS specialists Infotech Operations, are to run a series of seminars on the next five years' technology developments and their effect on the role of the operations department.

Called the International Management Forum, it is aimed at the operations manager, and meetings are to be held in London on October 17-18, November 14-15 and December 17-18.

HINT OF THE WEEK

For those who can't hear the telephone

WHEN the card readers are going full out and two or three printers are clattering away, the computer room is a very noisy environment. This causes problems for the operators when they are dealing with telephone calls from job control and users.

To ease matters, use telephones which have a facility for adjusting volume, suggests Mike Lena, a shift leader at Queen Elizabeth Hospital in Edgbaston, Birmingham.

He writes, "If noise is a problem at your site, get the Post Office to install telephones which are normally supplied to the hard of hearing.

"Fitted to the earphone is a knob which enables you to adjust the sound level. This often makes it easier to understand what the person on the other end of the line is saying."

By the way, the Post Office charges £5 for installing these telephones, and the rental charge is 40p above the standard quarterly rate.

'No longer living in the era of the Tolpuddle Martyrs'

"IF more people were convinced that we are no longer in the era of the Tolpuddle Martyrs, these full-time union officials could only add to the swelling unemployment figures."

With these words, R. Jacobs, operations manager at British Enkalon in Leicester, comes to the defence of John O'Reilly, chief operator at Astral Computer Services, London.

O'Reilly was criticised by union officials (Op Spot, June 14) for saying that there is no need for operators to become involved with unions, and that anyone dissatisfied with his site has only to seek another position in the industry (Op Spot, May 24).

Comments Jacobs, "To use the words of H. Moore of APEX, I am quite sure that John O'Reilly is 'worth his buttons'. If that were not the case, he would not be a chief operator now."

According to Jacobs, operators should bear in mind that chief operators, managers and the like have experience of working shifts in the computer room environment.

"It must be remembered that the equipment we used was, in most cases, similar to that in use today. Even with the advent of new technology, the underlying principles of operation have not changed dramatically."

Looking back on his time as an operator, Jacobs recalls that staff were genuinely interested in the work:

"In my days as an operator, we were not particularly interested in what we could squeeze from an already overstretched OP budget," he comments.

He remembers how he and his colleagues were prepared to perform tasks above and beyond the call of duty for the good of the department:

"We came into computing knowing full well that we were required to work shifts and all the hours that God sent us.

"How many operators I wonder, can remember the times they chose to work through their meal break or left several hours late in order to help the next shift? I certainly can.

"Very rarely was payment asked for on such occasions. Overtime pay was only expected when management actually requested extra time to be put in by the operators."

He mentions that when he was an operator, the majority of staff realised that the computer room "beats hell out of 90% of other forms of employment."

In his view, the majority of present-day operators have an attitude similar to that of their predecessors.

But to those who haven't, he says: "I would suggest that the few who suffer from the nine-to-five syndrome should carefully re-examine their choice of career."

56-70 Putney High Street SW15

Modern self-contained first floor Offices 6,850 sq. ft. To Let

- Air-conditioning
- Double glazing
- Good natural light
- Computer Floor
- Car parking
- Ancillary storage space

Edward Erdman and Company · Surveyors
6 Grosvenor Street, London W1X 0AD · Telephone

Edward Erdman

LETTERS TO THE EDITOR

'France and UK becoming the laughing stock of videotex world'

YOUR story "French pull the plug on Prestel" (CW, June 28), illustrates all too well the dangers of a narrow and parochial attitude towards viewdata/videotex developments.

There is no question that the future markets for videotex products and services are huge. The world's first private enterprise videotex services are about to be launched in Holland and the US, while the public service in the UK is now in being.

Trials are also being conducted in most European countries, in Canada, Hong Kong and Japan. In terms of hardware, software and expertise valuable markets are opening up. My own company has sold its videotex research services in over a dozen countries.

The UK has a lot to offer. Prestel is still the most advanced system, in terms of the volume of information available and the range of applications covered. The lessons learned during the build-up to a public service in Britain are utterly invaluable.

The French system also has a lot to offer, particularly for an accented and subscripted language. It has much greater flexibility than Prestel, at the cost of lower efficiency.

How are Britain and France responding to the big opportunity that these videotex markets offer? By pooling their research findings? By devising a joint standard, and selling it to the rest of the world? By mounting joint Anglo-French sales missions to sell the concept of videotex first and specific products later?

No: they respond by, at best, ignoring and, at worst, denigrating each other's product.

Thus they damage the concept of videotex and reduce the market potential as a whole. Both countries are to blame and examples could be quoted against both.

There is a task here that requires ministerial action. Let Sir Keith Joseph and M. Norbert Segard issue a top-level non-aggression directive. Let Britain and France get down to serious joint work to develop the global market, rather than indulge in mutual recrimination and abuse.

The present situation brings relief only to the Americans and Japanese, who will benefit if the European suppliers falter — and who, I can assure you, find these Anglo-French squabbles vastly amusing.

France and Britain are well on the way to making themselves the laughing stock of the videotex world. Decisive action is needed to stop this stupidity.

DAVID BUTLER
Butler Cox and Partners,
London, EC1.

Putting law study record straight

I MUST take exception to your front page headline (CW, June 21) "Grandiose law project panned", which bears no relationship to the EEC Commission's technical study in legal information retrieval as discussed at the symposium in Strasbourg, nor even to the article associated with it. I had thought that sensation seeking headlines were the prerogative of the popular press and had no place in a technical journal which had a duty to provide balanced, fair reporting.

To put the record straight, the Commission's study was a European-wide investigation aimed at identifying the common problems faced by all countries in the dissemination of the law, and at suggesting solutions to these problems based on the use of modern computing techniques.

This formidable undertaking was entrusted to an international consortium (German, French and British) whose project team, ably lead by John Killoury of Scicon, carried out the task in a highly professional manner.

The work done, embodied in six reports submitted to the Commission, was well received at Strasbourg and its high quality recognised by those present. This project has acted as a catalyst in this subject in Europe which was reflected by the heavy demand for places at the symposium.

Certainly a lively debate took place, certainly there was criticism, but it was constructive and useful and in no circumstances could the word "panned" be used to describe the proceedings.

Finally, may I say that the project was firmly based on the real needs of practising lawyers in Europe and that it sought to acquire a deep understanding of the nature of this important subject and has proposed solutions based on the operational requirement identified both in the legal office and in the computer centre providing a legal retrieval service.

This was a European initiative in an important field, based on multi-national co-operation at the working level. This is the way ahead in Europe which deserves to be fostered and encouraged by all those interested, including, one hopes, a leading technical journal.

NORMAN NUNN-PRICE
Formerly project leader,
European Commission's technical study in legal information retrieval
Wantage,
Berks.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

CII-HB launches new comms products based on Level 6 mini

WITH an eye to the needs of users of public data networks, notably Transpac in France and the Nordic Datanet in Scandinavia, CII-Honeywell Bull has launched new communications products based on the Level 6 minicomputer. They are at present available only in CII-HB territory, but will be launched by Honeywell in the US, the UK and Italy when the need arises.

The new products give considerably more substance to CII-HB's communications architecture, and in recognition of this, the company has added yet another acronym, Distributed Systems Architecture, DSA, which becomes the central element of the Honeywell networking philosophy, which is called Distributive Systems Environment, DSE.

The announcement comprises counterparts for two key processors in IBM's Systems Network Architecture portfolio.

The Datanet 7100 is a Level 6-based communications processor designed to perform the same kinds of functions as IBM's 3705. It can be used to front-end a Level 64 or Level 66 host mainframe, and handle network control, concentration and switching.

The Level 6/DSS, Distributed Systems Satellite, is a terminal controller capable of handling substantial autonomous local processing, making it a direct counterpart of IBM's 8100.

The Level 6/DSS allows terminal users to perform file transfers, execute transactions with database access and remote batch processing on the host mainframe or mainframes.

As with the newly-enhanced IBM SNA, (Software File, June 28) and Univac's Distributed Communications Architecture, DCA, which features the powerful DCP-40 communications processor (CW, June 14) the CII-HB DSA allows users to construct almost any shape of network.

The announcements from these three manufacturers underline the lack of any comparable offering from ICL.

PO's £1.5m microwave boost

GROWTH of telephone and data traffic throughout the UK trunk network, currently running at over 10% a year, is to be catered for by additions to the Post Office microwave radio network.

Orders worth £1.5 million have been placed with GEC Telecommunications for 6.8 GHz radio equipment to be installed in existing transmission and repeater stations, and a new link will set up to Sullom Voe in the Shetlands for communication with North Sea oil operations.

The microwave network also carries television signals for regional retransmission, for which it was originally set up in the 1950s.

CORAL NEWS

Coral News appears every quarter to provide users with up-to-date information, news and opinions. Items for inclusion should be sent to the Coral Press Co-ordinator, The National Computing Centre, Oxford Road, Manchester M1 7ED.

STANDARDISATION:
A draft British Standard for CORAL 66 has been issued by BSI and is available at £1.50 from their office in 101 Pentonville Road, London N1 9ND. The standard incorporates comments made on the MOD Official Definition — the Blue Book. CORAL 66 has been accepted by ISO as a candidate for international standardisation and they are circulating the draft for international reactions.

CORAL AVAILABILITY:
From four compilers in 1969, compilers now cover 38 machine ranges and are available or under development for machines from the following manufacturers: CII, Computer Automation, Control Data, CTL, Data General, DEC, Ferranti, GEC, Hewlett Packard, Honeywell, IBM, ICL, Intel, Kongsberg, Modcomp, Motorola, Nordan, Norsk Data, Perkin Elmer, Plessey, Prime, Rank Xerox, SEL, Smiths Industries, Sperry Univac and Texas Instruments.

TRAINING:
Courses in CORAL 66 are regularly offered by several organisations including John Bell, CEGB, Ferranti, GEC NCC, Preston Polytechnic and SDL. NCC's Real Time Program Design course was developed for the CORAL 66 groups, and runs for two weeks starting 3rd September and 19th November.

BOOKS:
Two books are available on CORAL 66.
John Webb's "CORAL 66 Programming" and Halliwell and Edwards "A Course in CORAL 66".
The books are £5.00 each from technical bookshops or NCC — the publisher.

MASCOT:
MASCOT — Modular Approach to System Construction, Operation and Test — is an integrated approach to design, implementation and testing of real-time parallel processing software based on a form of modular decomposition.

Dial 999 in the West Midlands and your call will be handled with the help of CORAL 66. The police there have a real-time system for the command and control of incidents. After successful trials for the Birmingham police, local government reorganisation in 1974 required a larger implementation for an extended region to include Coventry and Wolverhampton. The system deals with reported incidents and keeps track of availability and location of resources. It is estimated that by 1983 they may have to deal with up to 600 incidents an hour, and cater for resources of up to 1,000 units on foot, motor cycles or cars.

Incidents can be entered through VDUs situated in any of 32 subdivisions at the control control room with further VDUs in traffic control. The information eventually consists of details of the incident, action and results and is built up into an incident log. A sophisticated method of recall permits examination of previous entries. The system carries a street index which includes noteable landmarks and displays near misses so that operators do not need to know the exact spelling of all locations in the area.

The system operates on two Ferranti Argus 700s each with 192K bytes of core store and 4.5M bytes on disc. While one processor handles the notification of incidents, the other linked processor handles management information, which is available on a daily, weekly, or demand basis. A particular feature of the system is reliability for in the event of failure, the second processor takes over incident handling. Peripherals in the system includes a line printer and magnetic tapes which are switchable between the two processors. The system also handles message switching for the force's teleprinter network, and is linked to the police national computer at Hendon.

The operating system used is OSC 46 with enhancements by LEASCO.

CORAL 66 was used for all application programming and systems software.

Customers suggestions have been incorporated in HPAC's latest version of their CORAL 66 Compiler which they have brought into line with the official blue book definition. The compiler, which runs on LSI 2 and PDP11 computers, has a basic price of £2,600 but is a free update for existing customers.

Ferranti will supply a computer control system for the new BP Chemicals PVC plant being built in Barry, South Wales. The system written in CORAL 66 is based on dual Argus 700 processors. A particular feature is that the main computer can maintain control while further CORAL 66 development is possible through a test simulator.

Real Time applications of microprocessors may be developed quicker as a result of software package released by SDL. The system CONTEXT (Construction, Execution and Test) allows programs to be developed on a PDP11 working under RSX-11M, before being down loaded on to a target microprocessor.

As is now usual with computer releases, CORAL 66 is among the compilers initially available on two new systems from Norsk Data, Norway's mini computer manufacturer. The NORD 100 with 16 bit words is a frontender to the NORD 500 which uses 32 bit words. Both machines can share main memory which in the case of the NORD 500 can be a massive 32M bytes supported by disc storage of 8.8 gigabytes. Nord mini computers are available through Richard Nerton (NORD) of London.

RSRE has placed a contract with Computel Analysis and Programmers Limited to develop a set of assessment tests. These will be used to ensure that implementations of MASCOT conform to the official definition. MASCOT itself is a significant step towards standardisation of the approach used for the development of real-time systems for the Ministry of Defence.

Control Data has released its version of the SDL CORAL 66 Compiler to run under the "Network Operating System" on its Cyber 170 and 170-700 series of computer systems. This will be available to all Control Data Cyber customers world wide on a rental or paid up Licence basis.

CORAL 66

PEOPLE AND EVENTS

By Judith Morris

Golden day for Kathy

PICTURED outside Buckingham Palace is Kathy Cutler, secretary to the product division manager of Redifon Computers, after receiving her Gold Award certificate from the Duke of Edinburgh. The occasion was the second memorable event for Kathy, who had also attended a special tea given by the Duchess of Norfolk at Arundel Park, where she received her Gold Award brooch.

The award, in the Duke of Edinburgh Award scheme, was given to Kathy for her participation in projects which included working at a national children's home, Crowley hospital and working with opliastic girls whom she took on holiday to Littlehampton. Kathy has since worked with these children independently.

SSI announces key jobs

SSI International, formed this year by Lowndes-Ajax Computer Service and Social Systems Inc, has announced the appointment of three key personnel. The company was formed to market Simplan, the corporate planning and modelling system, in Europe the Middle East and Africa.

Linset Woodcock has been appointed managing director of the company. He has been director of marketing for Lowndes-Ajax Computer Service since 1977, and before that was head of management services in Europe for Max Factor and Franklin Mint.

Sales manager of SSI is John Savage, who was instrumental in marketing Simplan in the UK for the past year and previously worked for the Canada Systems group. He was one of the first to market Simplan in Canada.

A former member of the operational research groups of Barclays Bank and Air Products, Geoffrey Johnson, has become service manager of SSI International. He is responsible for the educational and application support areas of the Simplan system.

Retail director

NEWLY appointed divisional director of the retail systems division of NCR is Bill Hawley, who was formerly manager of systems services, support division. He succeeds Jack Poole, who has taken up an appointment as director of retail systems for the Middle East and Africa.

George English, computer centre manager for Compower in Connock, has been appointed general manager of operations responsible for the overall efficiency of the company's network of regional service centres. Pat Fox has become Cannuck centre manager. He was previously the bureau's network controller.

Soccer results

Division 1

Alcatel 10, Jadpu "A" 1

Division 2

Dalesolva City 8, John Lewis 2

SBS 2, Airfix 0

Division 3

3Ms 3, ICL 1

Comshare board appointments

THE UK computer services company, Comshare, has announced the appointment of two deputy managing directors and nine new directors to the board.

Alex Jones, technical director, and Roy Poultnr, sales director, have been appointed deputy managing directors.

The nine directors include Nic Birtles and Steve Millward, Birtles was previously n divisional director in charge of finance and banking. With his promotion he has moved to sales in the South. Millward has been made director of marketing; he was formerly a divisional director for the Central region.

The other new directors are John Cutting, Howard Gareilick, Dtan O'Leary, Brian Robson, Keith Talbot, John Taylor and Mike Tullt. All of the newly appointed board members have been with Comshare since the company's early days and its European inauguration in 1971.

Malcolm Vickery has been nppointed senior systems consultant with Arbat UK. He joined the company when it was formed in 1972 and his previous positinn was that of senior systems analyst.

Roger Sherrin has been appointed branch manager of Scope Onto Systems London area office at Bexleyheath. He was previously a sales executive with Computer Ancillaries of Egham.

Per Dldal, a former senior and principal consultant with the Computer Aided Design Centre in Cambridge, has now become an independent consultant.

Dave Atherford has joined Burr-Brown International as a sales engineer for Scotland and the North of England before taking this position, he was a senior design engineer with Marconi Space and Defence.

Neal Dempsey has been promnted to the newly created position of vice-president of sales for the data communications division of the Harris Corporatinn. He was previously national sales manager of the division. In his new position he will have responsibility for data communications division products and services for the US and Canada.

Griffin — Sherrin

Govid Griffin, after two years with Control Data as o soleaman in the team which deals with central government, has now joined Computer Machinery Company as territory manager.

Michael Tourneyan has become central regional sales manager for data communications with Penril Corp. He last worked for Dynatech Data Systems as regional manager.

Simon Nieboar has been appointed general manager of ORG Systems Supplies. For the past three years Nieboer has been a marketing manager for ORG Flexible Packaging, of Bristol.

Paul Adams has become the first sales executive of Micro Focus. He joins the company from ICL, where he was account sales executive. In his new position he will be responsible for marketing the company's compiler for microcomputers on a worldwide basis.

John Owen has been appointed managing director of Wilcox Computers. A chartered accountant, he joined the company as company secretary. Norman Wilcox, the former managing director, is now chairman of the board. Formerly project leader with British Aerospace, John Walmsley has joined Wilcox Computers Research and Development team.

Chairman of Project Managers

THE Association of Project Managers (Internet UK) has appointed a new chairman, Len Connor of the OHSS. He takes over from Herbert Walton, who reported at the recent AGM both increased membership and a wide range of activities over the past year. The events included weekend schools, seminars, and an international study conference which took place in Jersey.

ICL director

Lazenby — Fraser

ICL has announced the appointment of Donald Fraser as director of personnel, where he will be responsible for the personnel function throughout the ICL group. He reports directly to Peter Ellis, deputy managing director of business strategy and resourcing.

Fraser joins the company from NCR where he was a member of the board of directors and was director of personnel resources of NCR's UK company. Prior to this he was personnel director of Rank Radio International, and was also a member of the board of the Rank Organisation.

Iain Lazanby is appointed internal sales and applications engineer with Portescap UK. He joins the company from Prestcold where he was a member of the technical sales department.

John Priestley has joined Lowndes-Ajax Computer Service as a sales executive, based at Warrington. He was formerly a senior systems specialist with Kalamazoo in Birmingham.

NCR long drive championship

THE NCR national long driving golf championship has attracted a record entry this year, with over 2,750 participants and the longest qualifying drive being 310 yards, compared to last year's winning drive of 295.

The championship, which is sponsored by NCR and organised by the journal Golf World, is in aid of the Golf Foundation, and is open to both professional and amateur golfers. The Northern heat will be held in Manchester on July 13, with the three remaining regional heats being held in August and September. The final will take place at Stoke Poges Golf Club on October 1.

Tony Greenberg, a former sales executive with NCR, has joined Redifon Computers as senior territory manager for central accounts North East. Paul Hamilton has become senior territory manager for the South-East branch. He was previously accounts manager with NCR.

Joel Martin, formerly manager of communications of Documentation Inc, has become vice-president and general manager of the company's subsidiary, Docuprint.

Harvay Ullohn has been appointed product manager for Sintrom for the company's products, the Dennison range of label printing systems and the Perkin-Elmer 3500 programmable work station. Ullohn founded Pragma in 1971 as a UK distributor of American manufactured peripherals and terminals.

Challenge for charity

EMPLOYEES of computer installations are being challenged by the Thames Valley branch of the Association of Independent Computer Specialists. The association wants computer people to try to earn more money for charity.

The AICS is entering a team in a sponsored wheelchair push which is being held by the Windsor and Maidenhead District Sports Association for the Disabled, on July 14. Any employees of computer installations in the Thames Valley area who think they can raise more money then AICS should contact John Jenkins, 55 Moor Lane, Maidenhead.

George Eaton has been named as vice-president of engineering at Cubic Corp's defence systems division. Prior to this he was director of training systems and logistics for two years.

Chris Phelan has been appointed as sales manager of Cambridge Computer Services, which he joins after eight years with ICL as a salesman and sales manager.

DIARY

JULY 12
Education for the future IV: education by computer? ASE, CET, SCSST. Bradford University, Bradford, 9.30.

JULY 16-18
Operational data security workshop. Operational Data Security Corp Hotel Zurich, Zurich, Switzerland.

JULY 18
Who audits our freedom? IDPM, Pearl and Dean Studio, Broadwick House, Broadwick Street, London W1, 18.00.

JULY 19-20
IBM CUA local authorities group. County Centre, Cambridge.

JULY 26-27
Workshop on program transformation. BCS Formal aspects of computing group. Imperial College, London.

AUGUST 6-8
Pattern recognition and image processing, IEE Computer Society, Chicago, Illinois. Contact: Pattern recognition, PO Box 639, Silver Spring, MD 20901.

AUGUST 19-22
Third Rocky Mountain Symposium on microcomputers. IEE Computer Society, Pingree Park, Colorado. Contact Michael Tindall, Dept of Computer Science, Colorado State University, Fort Collins, CO 80523.

AUGUST 21-24
1979 International conference on parallel processing. IEE Computer Society, Bellaire, Michigan. Contact Prof T. Feng, 4425 Hardwoods Drive, West Bloomfield, MI 48033.

SEPTEMBER 4-7
Compcon Fall '79. IEE Computer Society, Capital Hilton Hotel, Washington DC. Contact Compcon Fall '79, PO Box 639, Silver Spring, MD 20901.

SEPTEMBER 17-18
Fourth international conference on software engineering. IEE Computer Society, Munich, Germany. Contact Prof Fritz Bauer, Institut fur Informatik der Technischen, Universitat, D-8 Munchen, 2 Arcisstrasse 21, Postfach 20 24 20 Germany.

SEPTEMBER 26-28
Computers in cardiology. IEE Computer Society, Geneva, Switzerland. Contact Computers in Cardiology, Centre de Cardiologie, Hopital Cantonal, 1211, Geneva 4, Switzerland.

COMPUTER COURSES

from The Oxford Business School for British Computer Society Associateship Examination and for Management Existing. This new series of courses combines the convenience of being able to study at home with the benefits of a personal tutor available by telephone plus optional seminars. For detailed leaflet and application form write to The Director, Department CW, Oxford Business School, 266 Banbury Road, Oxford OX2 7DL, or telephone 0865 54231 (24 hrs.).

A COMPUTER WEEKLY HANDBOOK

BASIC FILE DESIGN

BY OWEN HANSON

This book provides a brief but authoritative review of the most frequently used file organisation techniques, and of related subjects such as data security and software aids.

The file designer is shown how to choose between the available techniques on the basis of known or forecast information rather than rule-of-thumb, and methods of ensuring that the correct choice has been made are given.

New work carried out by the systems analysis division of the City University Business School, London, is linked with previously published information to provide methods of optimising the performance of sequential, direct and indexed files. Marked improvements can be achieved, particularly with direct files, which are worthy of wider use than at present.

Students of data processing, lecturers and practitioners should all find the book invaluable, particularly because it provides a great deal of information and many illustrations in a very compact format.

£1.50 including postage
Rates for bulk orders on request

Available from:
General Sales Department
IPC Electrical/Electronic Press Ltd.
Dorset House, Stamford Street
London SE1 9LU

Announcing TSB Computer Services' new consultancy division are (left to right): Bruce Cannon, manager of external services, TSB Computer Services; Robert Brotherton, general manager, TSB Computer Services; Colin Sommerville, deputy general manager, administration, TSB Computer Services; and Peter John Down, director of services, consultancy division, TSB Computer Services.

TSB sets up financial and networking consultancy

WITH a view to capitalising on its considerable expertise in online real time and financial applications, TSB Computer Services of Cheshire has established a consultancy division.

It plans to offer consultancy services to financial institutions and anyone establishing a real-time network both in the UK and abroad. Overseas it intends to concentrate on the Comecon countries, the Far East and selected African states, but expects to get work in the US as well.

TSB Computer Services has been operating for 10 years, and now handles computer applications for 65% of the Trustee Savings Bank group. It has served the Altrincham Group covering the whole of the north of England and Wales for several years, and has now been joined by the West of England group.

Since 1972 it has run an online real-time service with counter terminals installed in TSB branches, based on five ICL System 4/72 and 4/70 mainframes installed at computer centres in Bootle, Kidderminster, Manchester and York.

Eighteen months ago it became the first UK customer for the Univac 1100/80 large-scale mainframe, having decided to concentrate all the central processing in a single, new, computer centre in Wythenshawe, Greater Manchester.

Plans are being laid to keep the System 4 centres in service with other work once the real-time network has been transferred to the 1100/82 system.

After selecting the mainframe, the company went out to tender for terminals to replace the existing Olivetti devices and finally chose modules from the new Burrougha banking terminal line.

A rigorous step-by-step approach to hardware selection — developed to make sure that the right machine to replace the System 4s was chosen, refined during the terminals selection process and since used in the choice of an automatic teller terminal for a pilot trial — is one of the first services on offer from the new consultancy. It consists of a set of three documents, and one day's consultancy is included in the price.

Five key areas have been identified to spearhead the services offered by the TSB division. It will offer advice on strategic issues — the vital question of whether an application is worth putting on a computer or not. If so, it will then provide planning and design assistance, and transfer techniques it has developed for its own use. One of these is optimisation of operating systems for a transaction processing environment.

In the case of the Systems 4s, TSB achieved a remarkable increase in the transaction handling capacity — 14 transactions per second instead of six — by stripping out redundant parts of the operating system.

Similar optimisation is now under way on Univac's OS/1100, and the projected capacity of the 1100/82 system is 70 transactions per second.

The consultancy will also be prepared to adapt existing TSB systems — and the availability of the low-cost 1100/60 computer from Univac will make a subset of the new system particularly attractive — but there are no plans to undertake major software development contracts.

Training, and experience working with the TSB team on current systems will also be offered — and has already been given to employees of one overseas client.

TSB has not identified the client, but it is understood to be one of the major Iranian banks, which is also equipped with a Univac 1100, and implemented a pilot online system with TSB assistance. The collaboration has been suspended since the homecoming of Ayatollah Khomeini to Iran, but may restart once order is restored.

In general, TSB hopes to work with a local partner on foreign contracts, and sees good prospects for business in Eastern Europe with banks which are ICL customers. This could involve transfer of expertise and possibly large parts of the System 4 system in partnership with ICL.

Target customers in the UK include building societies, credit unions and friendly societies, and also organisations in the retail and distribution fields.

NEWS IN BRIEF

Seven times more storage

AMONG the announcements accompanying IBM's 4300 launch is the fact that the new 3370 discs can also be attached to a System/38. Offering a sevenfold increase in maximum possible storage — up to 2280 Megabytes with four 3370s — the new devices offer a cost per byte of one twentieth that announced with the System/3 Model 8 in 1974.

Quick assembly

TO help eliminate inventory and production control problems, Hubbard Engineering, the transport refrigeration and vehicle air conditioning company, has installed a Nixdorf 88/70 minicomputer at its headquarters in Otley, Suffolk. Hubbard is hoping that the system will allow it to have the necessary components — from a range of 7,000 — available for quick assembly.

Store group order

FURTHER point-of-sale equipment installations have been carried out by department store group Owen Owen, which has bought 44 NCR 2151 PoS terminals.

Solicitors say plans for registration of data banks are ill-considered

UNCERTAINTY and confusion over registration of data banks will result if the Data Protection Committee's proposals are implemented as they stand, claims the Law Society in a preliminary memorandum on the proposals to the Home Office.

Many aspects of the recommendations have not been properly thought out and in places conflict, the Society asserts.

The Law Society, which is the solicitors' professional association, declares itself in favour of the principle of having data protection legislation, and of the flexible approach proposed by the DPC whereby different applications would have different regulations covering them. However, it points out that of the 80 different classes of application listed in the DPC report, some are defined by type of data, some by the type of user, and some by the technology.

"This seems," the memorandum says, "to open up a prospect of a multiplicity of different codes of practice which may conflict or overlap, with the possibility that several different codes might govern a single application." Thus users will not be able to tell which regulations they must follow. This needs to be clarified as a first priority, the Society says.

There is also confusion, in the Society's view, over what applications would have to be registered and whether unregistered applications would be regulated. It proposes a two-tier registration system, with the lower tier for minor applications for which no code of practice is needed.

The Society expresses concern over the principles that data should only be used for purposes authorised when it was collected. There are many applications where no purpose is specified. It says, and would prefer the principle to be "Personal data should be handled for reasonable and legitimate purposes only." The Society does not, however, go deeper into the question of how the vague terms "reasonable" and "legitimate" would be defined.

The Society is also worried about how judicial control over data protection would work, since the powers the courts would have over the Authority's actions are unclear, and the rights of a data subject who thinks he is not being properly protected are similarly confused. There would be a need for effective control over the "very extensive" powers of the DPA.

Difficulties are envisaged over conflict between the DPC's "flexible approach" and more rigid rules that may be laid down in international conventions.

They give instant relief to your mainframe.

If you're suffering from mainframe overload, schedule delays and back-ups, or pain from high communications traffic, Data General can offer you instant relief. With the Eclipse decentralized systems of distributed data processing.

Our critical difference is this: we put the actual data processing capability and your data base into your hands where and when you need it.

Eclipse. New tonic for tired systems

With the Eclipse system, you and your colleagues can collect and process data on the spot, up-date simultaneously and access all up-dated information immediately, at any terminal, at any time.

Eclipse offers you better balanced hardware: powerful processors with 10 megabyte per second input/output channels – powerful and versatile interactive software systems – ability to process batch jobs simultaneously with real-time treatment.

What else?

Eclipse dialogues with other computers and speaks universal languages like ANSI 74 COBOL, PL/1 and RPG II. Virtual COBOL lets you run any length programme from any terminal where and when you want to.

Eclipse can help you now, with a complete family of compatible distributed data processing systems ranging from £41,000 to £202,000.

Data General

A NEW GENERATION OF COMPUTERS. 63,000 ARE NOW AT WORK IN 57 COUNTRIES.

Marketing Communications, Data General Limited, 3rd and 4th Floors, Hounslow House, 724-734 London Rd, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455

MICRO NEWS

by Martin Banks

Larry wins factory for a year

SOME people win on the pools, some come up on the Premium Bonds, but college lecturer Larry Rowe has managed to win something completely different — a factory.

It will be his rent-free for a year as the winner of the Bowthorpe Enterprise '79 competition, organised jointly by Norwich City Council, Dencora Securities, and the Norfolk Small Firms' Information Service.

The object of the competition was to find a new business that had sufficient development potential to create new jobs in the Bowthorpe employment area.

Rowe, seen here (right) with Bowthorpe councillors Len Stevenson (centre) and Ralph Roe (left), won the competition with a micro-based educational computer system. Bulli, he says, "is a price school and colleges can afford," the system is designed to provide practical "hands-on" experience in electronics and computer science.

He has been producing them for two years in his home in Poringland, Norwich, and in that time has sold systems worth some £20,000. Now, with a 3,870-square-foot factory, he aims to build up the business. He does not, however, intend to give up lecturing.

Show's switch to small business systems was a great success

THE emphasis placed on small business systems by the organisers of last week's 1979 Microcomputer Show, a major switch from the theme of "Do-It-Yourself" that had prevailed in the last two years, proved a considerable success.

More than twice the number of people, 2,500 compared to 1,000 last year, packed into the Bloomsbury Centre Hotel on the first day of the show to awest it out on the tour round the stands. The situation was not helped by the hotel's air-conditioning breaking down.

In fact it says something for the growing reliability of microcomputer systems generally that, despite the heat and humidity of the exhibition hall, none of the equipment on show seemed to suffer. The same could not olwsys be said of the humons.

Perhaps that was why one of the popular stands at the show was that of Nascom Microcomputers. Marketing director Kerr Borland and his team did a roaring trade in tee-shirts.

The firm was also generating interest with the first public showing of the Nascom 2 kit, together with a new addition to its add-on range of products, a colour board. This uses 6K bytes of static RAM for high resolution work, or 3K bytes for low resolution.

Sixteen primary and complementary colours are available, including black and white, and the screen area can be programmed for up to six different programmable colour squares. Both foreground and background colours are independently selectable.

Keen Computers and Personal Computers took stands to exhibit the Apple II microcomputer, and both were showing systems working with non-Apple high capacity storage systems.

Keen was showing a very compact hard disc system from Corvus Systems, which the company is distributing in the UK. Using the Apple disc operating systems directly, so that there are few interfacing problems, the disc offers 10M bytes of storage per drive. Keen is selling them for £3,500.

Personal Computers was demonstrating a 1.2Mbyte dual floppy disc drive, called the IDA 8000. The Dutch-made system, now being distributed in the UK by Personal Computers, uses single-sided, double density drives offering 630K bytes per drive. The price will be around £2,400.

Happier news of the Processor Technology Sol computer was to be found on the Comart stand. Following the company's demise in the US recently (CW, June 28) its UK distributer, Comart, has bought the entire work in progress for the Sol's video display monitor board. Offering both upper and lowsr case characters on displsys of up 64 characters by 16 lines, it formed the heart of the Sol-Star word processing system.

Comart is to continue marketing the system, which was based on a Sol computer and North Star microdisc, only now it will be configured around a North Star Horizon processor, the video monitor board, and a monitor display, with a choice of printar.

A new UK designed and built system intended for business applications at the show was the EuroC. Manufactured exclusively by Plessey Microsystems for Euro-Calc, which has prepared the software for the system, it uses an 8080A processor to run 64K bytes of RAM and two double-sided single density 8-inch floppy disc drives offering around 1 Mbyte of store.

Rules for crash-free software testing issued

JERRY THOMPSON, managing director of Shade Computer Services, has now provided a full set of rules for his challenge to the microcomputer software industry to produce crash-free programs (Micro News, June 21).

The £100 prize he is offering will be paid to the first writer of a program that survives a series of tests he has devised. Entries should be sent to Jerry Thompson at 108 Wessington Park, Caine, Wilts, enclosing a stamped-addressed envelope.

According to the rules, all software submitted must be written in Basic for running on a microcomputer system in a typical commercial application for a small business. The material submitted must include the actual software in a suitable form for running on a test system, detailed specification of the machine configuration required, complete documentation as supplied to the user, and software maintenance documentation.

The tests he has devised will cover a variety of errors, including matching of user documentation to the actual software, consistency of user responses required by the software, tolerance of the software to user errors, together with other tests for specific applications, such as numerical accuracy of results.

Immediate failure "modes" will include the display of any Basic error message such as EXTRAIGNORED, assumptions made by the software to user responses not detailed in the user manual, the display of any system message not requested by the software and not detailed in the user documentation, and numeric overflow conditions.

Any software that is claimed to be transportable will be transported. In this situation, any software changes will be judged as failure.

For a fee of £10, Thompson will provide a short report on the failure to the writer, and a more detailed report will now be available for £20. According to Thompson, a maximum of 30% of these fees will be retained to cover costs and materials, while the remainder will be paid to the Save the Children Fund.

Commodore figures 'record'

RECORD figures for revenues, earnings and earnings per share have been claimed by Commodore for its third quarter financial results.

Net sales for the quarter ended March 31, 1979 were $16,443,000, a rise of 58% over the same quarter last year. Net income was $1,482,000, a 79% increase. Earnings per share for the third quarter were $1.01, (compared with the $0.60 for the 1978 equivalent) which represents a gain of 68%.

The company is also claiming record performances for the first nine months of its fiscal 1979 year. Here, net sales hit $44 million, compared to $36.6 million in the same period during 1978.

Commodore is currently manufacturing and shipping more than 3,000 PET computers per month world-wide.

● Commodore Business Machines in the UK has moved into its new headquarters at 360 Leigh Road, Slough, and the company has sold off its factory in Eaglescliffe, Teesside.

NOW DATA 100 HAS 3 MORE SYSTEMS FOR CONTROLLING YOUR INFORMATION HANDLING, YOU HAVE NO EXCUSE FOR SECOND-RATE DISTRIBUTED PROCESSING.

Accurate, up to date, information is the basis on which all good business decisions should be made.

Whether it be Inventory, Cash Flow, Sales order processing or any of the vital daily management tasks it is essential to have current information.

Information must be managed to ensure that all the operators and managers have access to the data at the right place and time on demand.

DATA 100 has for ten years built up a reputation for the supply of remote data entry and enquiry terminals to over 200 Times 1000 companies.

DATA 100 now bring three new products to the market to further facilitate improved information:

The Sycor 290 is the money saving alternative to IBM for entry and enquiry terminals. The equipment can be purchased or rented on 1, 3 or 5-year terms from as little as £70 per month.

The Sycor 405 is the ideal starting solution for any organisation wanting to give local processing to departments or remote locations whilst communicating data to a central point. The equipment can be purchased or rented on 1, 3 or 5-year terms from as little as £180 per month.

The Sycor 445 is the advanced machine where more ideal data processing is required. The equipment can be purchased or rented on 1, 3 or 5-year terms from as little as £450 per month.

DATA 100 has built up a nationwide second-to-none service capability to ensure that your machines are always up and running. DATA 100 is a subsidiary of a $1000 million group dedicated to a progressive development programme of information handling equipment. So now you can see—you have no excuse for second-rate distributed processing.

DATA 100
SYSTEMS LIMITED
A Northern Telecom Company

Offices in Harpenden, London, Manchester and Glasgow

TO: Paul Hayes
DATA 100 Systems Limited
DATA 100 House, Arden Grove, Harpenden, Herts. AL5 4UD
Telephone Harpenden (05827) 63161
I would like to know more about:

DATA 100 ☐ The 405 ☐
The 290 ☐ The 445 ☐

Name:
Company:
Position:
Address:
Telephone: CW4

COGARVIEW

On the threshold of great strides in health care

I HAVE talked before in these columns about the computer industry's historical predilection for taking the easy way out. That is, for addressing itself to problems that require relatively little effort in solution, and ignoring those in which the computer could provide unparalleled benefits to the user but dubious profitability to the supplier.

It is because of this predilection, for instance, that computers are so widespread in industry and so rare in education. Industrial problems are amenable to fairly simple mathematical processes and can be replicated with minor adjustments almost *ad infinitum*, conferring increasing profitability with every fresh sale. Educational systems are hard to devise, would have to be virtually tailor-made for each school or class, would have no export potential, and are hence ducked by the wise computer man.

Health care, however, probably provides the best example of the industry's inability to handle the real problems of society. Virtually ever since the computer was invented, study groups, committees, working parties and plain individuals have been planning applications for which the power of the machine is ideally suited. Yet in the main, computers in health care are restricted to quasi-industrial or quasi-commercial roles — keeping records, billing insurance companies (outside the UK, that is), scheduling nurses' duty periods and so on.

I think times are changing, however. In the first place the microprocessor is bound to make automated laboratory equipment almost universal; the physical insignificance of the computing component of future instrumentation will make the concept a lot easier to accept. There will be no more bulky minicomputers sitting around on benches and desks, no more cobwebs of cables around the room. It will all be a lot less alien.

The micro, too, should make its mark in the non-diagnostic applications, especially where the administration of health care is at once highly bureaucratised and highly decentralised — like Britain's own National Health Service. The keeping of records on a simple, stand-alone system, surgery by surgery or clinic by clinic, should be a practical proposition.

But the future of health care computing is not predicated only on the advance of the micro. Health care is a major industry which in many developed countries threatens to break down under the weight of its own administration.

Britons tend to think of this as a purely NHS problem, but not so. In Germany almost the entire population is gradually being kitted out with a personal OCR card which will speed up the processing of claims on patients' insurance companies by doctors.

Formerly the doctors made out their bills by hand and posted them off to the insurance companies, where an expensive army of data preparation staff had to key them in.

As the science of database management improves, I would also expect to find a proliferation of medical information systems along the lines of the National Library of Medicine's online system in the US.

This is a dial-up system which allows busy doctors to access a biomedical bibliography maintained by the library. Now seven years old, it is available via Tymnet and Telenet as well as over direct phone lines and has terminals installed with about 1,000 medical institutions across the US, though as yet very few in private practices.

The main file is called Medline, and is an online version of the library's monthly publication Index Medicus, which is a reader's guide to the medical journals. There are also a number of files relating to the library's book stock and three which are maintained in conjunction with the National Cancer Institute, which together give the latest details of cancer research and treatments.

Toxline is an ontside-maintained file on poisonous chemicals, as is Rtecs — except that where Toxline is purely bibliographical, Rtecs has a computational capability.

Automated diagnosis or self-diagnosis are currently either at a very embryonic stage or available only as a gimmick, but they could become a standard part of health care, relieving highly skilled doctors and nurses of the tedium of the relatively undemanding question-and-answer routine.

Automated diagnosis consists of patient interrogation via VDU (invariably preferred to teletypewriters by patients, though no less accurate: why should this be?) to establish a basic model of the patient's general health and the specific nature of his or her current complaint.

The software itself is not particularly hard to write. The problems are human. A keyboard which allows more sophisticated replies than "yes," "no" and "don't understand" cannot be handled by many patients; a keyboard which allows only these three answers may frustrate the more intelligent. In experiments at Glasgow's Southern General Hospital it has been found necessary to accommodate two keyboards which can be exchanged according to the patient's ability to cope.

At the present state of play the computer's error rate in diagnosis of relatively simple complaints is under 20 per cent — about double that of senior specialists.

This is probably not acceptable in medical terms, although economically (considering the time cost of using top specialists to interrogate patients on simple illnesses) encouraging.

Self-diagnosis is a more contentious matter. There is a great craze for home blood-pressure machines in the States just now, one that is deplored by physicians who contend that blood-pressure reading is a matter of interpretation as well as mechanics.

But an Asahi subsidiary in Japan has now produced an improved sphygmomanometer which is claimed to eliminate the guesswork and adjustments required by conventional models and make home blood-pressure reading an accurate process for the first time.

Another new product in this field, the computer-controlled SKS 60 blood chemistry analyser of Hycel Inc, Houston, claims to improve automated blood-analysis machines used in hospital laboratories out of all recognition. Until now, such equipment has been hampered by a universal inability to provide accurate measurements of those blood chemicals that show up in very high or very low proportions outright, with a subsequent need for extensive retesting.

But the Hycel machine, since it is based on an advanced photo-optical detection system, is said to be able to pick up chemical traces that are too great or minute to be read accurately by other analysers and, linked online to a computer, can perform up to 15 tests simultaneously.

But it is self-diagnostic devices which probably carry the real promise of improved health care. In the wired city of the future, will homes be equipped with basic diagnostic aids like the home blood-pressure reading machines and polite is entrusted universally to check themselves out before calling a doctor? Why not? Maybe the instruments will also have a telecomms capability so that they can be plugged into the phone line and read off by the doctor at a remote location, who can advise on treatment (if any) without actually examining the patient at all.

The medical profession may shudder, but the technology to achieve this probably exists already. It's just a question of whether we want to apply it.

Hertz expands UK network

A MAJOR automation programme is under way at car rental firm Hertz which eventually will involve links to a Univac 1100/80 mainframe in Oklahoma City.

As a first step, rental offices in key locations like Marble Arch and Heathrow airport, and similar outlets in France and Germany, are being equipped with Olivetti TC800 systems including full keyboard, printer, floppy disc unit and display.

Initially the TC800s are being used just to calculate the amount owing when the customer returns the car.

Hertz at present does its volume processing on the BOC Datasolve bureau and also has TI 990 minis installed at sites in the UK and Europe.

Creation of a customer contract at the time of hiring is still done entirely manually, but Hertz plans to put in further hardware to handle this too.

The Univac 1100/80 system is replacing RCA Spectra 70s and runs the Hertz reservation system which will also be extended to Europe.

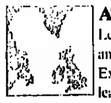
ATLANTIC

Extract from the Managing Director's Report

Overall turnover increased by over 70%—profitability increased accordingly in spite of the many pressures which growth imposed—over £3m worth of IBM computer systems installed during first quarter—new engineering subsidiary launched third quarter—Computer Leasing Company purchased first new 3031 Computer System—bank orders for three of its own on-order 303X systems for delivery in 1979—decision taken to move to new and considerably larger premises—depreciation period for new IBM 303X Systems set at five years—IBM 370 systems currently owned depreciated over five years, back-dated to the date of the inception of the lease—issued and paid up Share Capital increased to £767,280—exciting and busy 1979 in prospect.

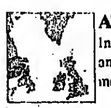
Year ended 31st December 1978

GROUP TURNOVER	PROFIT BEFORE TAX	NETT ASSETS
£11,478,000	£1,052,000	£2,577,000



ATLANTIC COMPUTER LEASING
Leasing of all IBM Computers and Peripherals. Low cost flexible leasing on IBM's new 303X and 4300 series systems. Short term rental of all IBM 370 Range Computers and Peripherals. Ex-stock availability of most current range IBM Computers and Peripherals on sale or lease.

ATLANTIC LEASING
Minicomputer/Word Processing machine leasing. Telecommunication systems leasing. Supplier leasing schemes of all kinds, industrial plant and equipment leasing, tailor-made lease and rental plans for industry, and vehicle fleet lease plans.



ATLANTIC COMPUTER ENGINEERING
Installation and discontinuance on all IBM 370 Systems and Peripherals, IBM Computers and Peripherals refurbishment, IBM feature supply and lit services, IBM 370 Systems memory upgrades, plus consulting and audit on all IBM Computer Products.

Copies of the Annual Report and Accounts are available from the Company Secretary.

Be sure to call Atlantic today: 01-583 9481

Atlantic House, Red Lion Court, London EC4.
Telex: 26344

Total number U.K. computer systems leased through Atlantic now exceeds 700

INTRODUCTION TO PASCAL

How the basic elements of a program fit together

By Dr Judy Bishop

This week, it's back to basics, in the third of Dr Judy Bishop's 10-part series, Introduction to Pascal. She looks at the fundamental elements of a Pascal program, and how they fit together.

Dr Bishop, a lecturer in computer science at Witwatersrand University, South Africa, first became acquainted with Pascal when she was studying for her PhD at Southampton University.

Part 3

THE first part of this series introduced Poscal, its history, uses and Implementations. In the second we looked at some of Pascal's dato types and how to make use of them in delining data for a Flexitime system. This week, it is back to basics. What are the fundumentol elements of a Pascal progrom and how do they fit together?

Vocabulary

Like English, Pascul's vocubulary Is built up of words and numbers. Numbers can be furmed in the usual way us integers, decimul fractions or "E"-formut numbers. In order to distinguish them from words and punctuation, they must always start and end with a digit.

VALID NUMBERS	1978	−11.99	0.5	−10E16
INVALID NUMBERS		−12.	.5	−E17

Words are declared at the beginning of a Pascal program. One can imagine these declarations as being the dictionary which applies for the rest of the program. Like most languages, Pascal has certain words which have special, unchangeable meanings. Examples of these are given In Figure 1.

BEGIN END	sin
IF THEN ELSE	integer
REPEAT UNTIL	true
read	AND
write	PACKED
eof	PROGRAM
reset	TYPE

Figure 1. Examples of pre-declared words.

The reserved words, usually written in capitals, are the basis of Pascal's control structure and number a mere 35. There are also 70 pre-declared words which provide the common types and operations (which one does not want to be bothered with delining oneself) such as integer, read, sin etc. Bearing in mind that PL/I lists over 250 keywords, this is a good example of how Pascal is kept small and simple at very little cost to the user (and to the great advantage of the compiler).

There are only three trigonometric functions, namely sin, cos and arctan because the others such as cosec, tan etc, can be derived very simply from these three. The point is that each user must build up his own vocabulary and not inflict it on others. Pascal is therefore a general purpose language, but makes no claims to being all-purpose. Before leaving the rother dry subject of lists of pre-declared words, notice that the reserved words are underlined or put In capitals when writing programs but the standard words are not.

Words

Computer languages usually place some restriction on the length of a word. It is interesting to reflect why this is so. The dictionary that each program defines has to be stored by the compiler and Is accessed frequently to check If a word is already defined or If it is being used In the correct context. Ideally one would like variable length entries but this slows down the access time. On the other hand, fixed length entries which are long enough for everyone, say, 100 characters, will waste a lot of space.

The language designer makes some compromise between these two, the most common being to limit words to 32 characters. Niklaus Wirth came up with a novel approach to the problem. He said that a word should only be limited by the length of a line (typically, but not always, 80 characters), but that only the first eight would be stored. The effect is one which most programmers hardly notice, that is that different words must differ over the first eight characters. For example, we can define in our flexitime system

```
hours
hoursworked
daysoftheweek
dayspermonth
```

but we cannot, in the same program, have

```
hoursworkedlimit
daysoftheweekend
```

These will have to be rephrased as, say,

```
limittohoursworked
weekenddays
```

so as not to clash with the first group.

Where have all the spaces gone?

By now, readers will be asking: Why are the words all squashed up? In fact it is not the words, but the phrases that make most computer terms which are written without spaces. This Is necessary in order to distinguish reserved words from others. Changing from upper to lower case is not practical on a machine. Therefore, In machine readable form,

MONDAY TO FRIDAY

Is three words and the TO can be recognised as reserved, whereas

MONDAYTOFRIDAY

is a single word.

Some languages that originated with large character sets permit an underscore In identifiers to aid readability and some Pascal compilers (notably Pascal 8000 for the IBM370) follow this convention. Thus

MONDAY_TO_FRIDAY

Is still one word.

Punctuation

Punctuation is important In computer languages because a compiler cannot understand words and needs symbols to help indicate context. Figure 2 lists the 20 or so symbols that Pascal recognises. Others such as | and ¬ were excluded because they are not present on all machines and therefore Pascal allows only the equivalent words, namely OR and NOT. Most of the symbols have their usual (English or arithmetic) meanings but two are perhaps worthy of further comment.

.	A full stop ends a program. It must come after the last END.
,	A comma separates lists of like items.
;	A semicolon comes after every statement *except* before an ELSE.
:	A colon balances synonyms or separates a statement from its label.
..	Is the equivalent of . . . in English and means "up to".
=	An equal sign indicates equality In declarations and expressions.
:=	The becomes symbol Is used to assign a value to a variable.
()	Parentheses are used as usual to delimit sub expressions.
{}	Brackets are used for comments and are usually written (*).
[ ]	Square brackets are used for array subscripts and sets. They can be written (..).
+ − * /	The arithmetic operators have their usual meanings.
↑	The uparrow (also written as @) Is the symbol for pointers.
<	Less than is a relational operator. The others are: [illegible] the last Indicating not equal.

Figure 2 Pascal punctuation symbols

Becomes versus equals

Most reasonable people know the danger of calling two completely different things by the same name. No parents would think of calling two children Susan, say. Yet in computer languages we have such an anomaly, started by Fortran nearly 20 years ago and propagated by Basic and PL/I. The unsuspecting = is used for both equality and assignment, two totally different concepts. How often have newcomers to programming been perplexed by the statement that

I = I + 1?

Seasoned programmer though I am, I spent an hour working out the meaning of a PL/I program which contained the statement

A = B = C.

This does not, as one might expect, assign C to B and B to A; rather, It works out whether B equals C and assigns the result (true or false) to A, with all the appropriate conversions.

It seems as If the Europeans were immune to this trap because all the Algol-like languages keep = for equality and use <- or := for "becomes" in assignments. In Pascal, the above two statements would be written

```
i := I+1;
a := b=c;
```

and the latter will only be valid if a is of type boolean, and b and c of exactly the same type. (Remember the strong typing mentioned In Part I of this series.)

The omnipresent semicolon

Pascal, like other Algol-like languages, has free format layout. That is, a statement may run over many lines and many statements can go on one line. Thus there must be some way to distinguish the end of one statement from the start of the next. Enter the semicolon.

Though the finer points of syntax are beyond the scope of this series, It is necessary to mention that Pascal's semicolon is a statement separator whereas PL/I's Is a statement terminator. In practice, this means that, in Pascal, the last one In a list may be omitted as In

```
BEGIN a:=b ; b:=c ; c:=a END;
```

and there must never be one before an ELSE In an IF-THEN-ELSE statement.

Part 4: Structure — and how to use it.

CONFERENCES

COMPUTER packages for information storage and retrieval is the subject of a two-day conference organised by the Institute of Information Scientists, to be held on November 12-13, at the Royal Society, London. A panel of representatives will answer questions on specific topics, a number of papers will be presented on subjects such as applications of packages on minicomputers and an exhibition will run concurrently with the conference, including displays by users and manufacturers of related hardware and software. For further information contact Janet Marsh, Haseltine Lake and Co, 28 Southampton Buildings, London WC2. Tel: 01-405 6093.

THE first European symposium on real time data handling and process control is to be held this year in Berlin. Real Time Data '79 will take place from October 23-25, and the languages for presentation are English, French and German. The conference will be held at Kongresshalle Berlin, as will the accompanying exhibition. Areas covered will include [illegible] requirements and trends, reliability and error recovery, and experimental research. It is organised by COC and inquiries and registration are dealt with by COC-Kongressorganisation, Kongress-Zentrale, Buro Berlin, John Foster Dulles Allee 10, D1000 Berlin, Germany.

Announcing the

PROFESSIONAL

Viewdata

EXHIBITION

A DEMONSTRATION OF EQUIPMENT AND SERVICES FOR THOSE PROFESSIONALLY ENGAGED IN TELETEXT AND VIEWDATA

To be held at

The West Centre Hotel

Lillie Road, London

on November 7 & 8

● The planned inauguration later this year by the Post Office of the world's first public viewdata system, in the form of the Prestel service, brings a pressing need for sophisticated hardware, software and other services for those intending to provide information to the system.

● But there is much confusion among both information providers and hardware suppliers as to the type of equipment available, what it can do and who supplies it.

● Since teletext and viewdata techniques offer ideal solutions for problems of information storage, retrieval and dissemination for both small and large organisations, these questions arise also among those responsible for such systems.

● To answer these questions and to bring together suppliers and users at one time in a convenient venue, "Viewdata & TV User" is setting up a select professional exhibition of hardware and services for teletext and viewdata systems.

● This is not a show of domestic user equipment for the general public, but an exclusive event entirely devoted to the showing and demonstration of equipment and services for those professionally engaged in teletext and viewdata.

For further information, contact The Exhibition Manager, Viewdata Exhibition, Room 821, Dorset House, Stamford Street, London SE1 9LU. Telephone: 01-261 8565. Telex: 25137 BISPRS G.

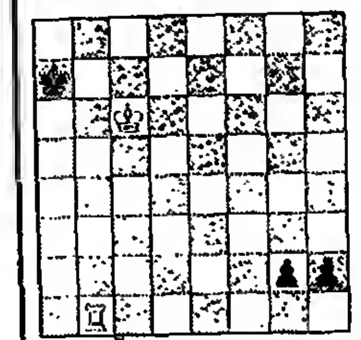
CHESSLAB

By Donald Michie

This Chesslab presents three problems, all of which were machine-generated. The first arose during a match between two programs, and you are invited to equal the solution which a third program found. The second and third problems were identified by Kenneth Thompson's computations.

Problems that are machine-generated

EVERY columnist must one day slip. Last Chesslab (CW, May 10) implied that the following study by Moravec



has a 14-move solution. This would have bettered the 22-move solution offered by Moravec which was found by Birmingham and Kent's program Master, and also by reader A. C. Nicholls of Bristol. The 22 moves go as follows.

1. Ra1+ Kb8
2. Rb1+ Ka7 (Or a8)
3. Ra1+ Kb8
4. Rb1+ Kc8 (Black must change to avoid repetition)
5. Ra1 (And here White must find a new motif)
5. ... Kd8
6. Kd8 Kc8
7. Kc6 Kd8
8. Kd8 Ke8 (Again to avoid three-fold repetition)
8. Ke8 Kf8
10. Kf6 Ke8
11. Ke6 Kf8
12. Kf6 Kg8
13. Ra8+ (Returning to the "initial pattern")
13. ... Kh7
14. Ra7+ Kg8 (Or h8)
15. Ra8+ Kh7
16. Ra7+ Kh6
17. Ra8 (White finds a mating motif again)
17. ... Kh5
18. Kf5 Kh6
19. Kf6 Kh5
20. Kf5 Kh4
21. Kf4 Kh5
22. Kf5 (And White claims a three-fold draw)

My remark about 14 moves was based on a note made while sitting at Master's terminal with Peter Kent, but neither he nor I can now reconstruct it. It could (unhappy thought) have involved the grossly fallacious.

13. Kg6 Kf8 (missing ... g1 = Q+!)
14. Kf6 (And White claims a three-fold draw)

Today's Chesslab presents a bumper crop of problems of machine origin. The position shown in Figure 1 occurred in a

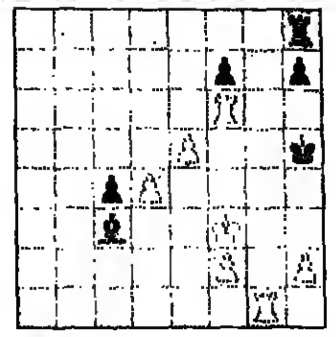


Figure 1

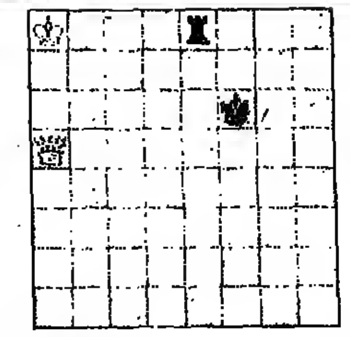


Figure 2

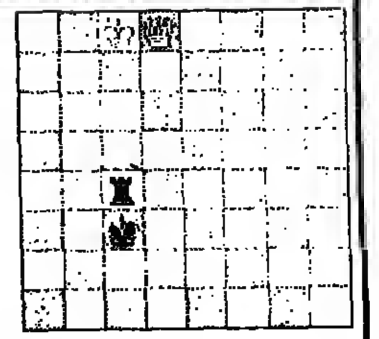


Figure 3

game between the programs David and CCCP (Columbia Computer Chess Project) which ended in a draw. COKO found a forced mate in eight moves? Can you?

Figures 2 and 3 both show 31-movers (!) of the form "White to move and mate or win the rook". They are known from Kenneth Thompson's exhaustive computations to be the two KQKR positions with the longest winning lines.

Probably these are too hard for the unaided problemist. But some hints can be extracted from two games played for wagers by Grandmaster Browne against Thompson's program's move-perfect defence.

Game records and commentaries appeared in the May issue of the British Chess Magazine. The reader should not be looking, in either case, for a unique line, as is demanded in strict study compositions.

Finally a report is overdue on January's jumbo Chesslab in which readers were challenged to write pattern-based programs for the KNKR ending which should recognise the condition "Knight's side lost in two ply". It turns out that, as expected, there is much meat in this innocent-looking task, which will require a separate Chesslab to deal with adequately. Meanwhile let me report that two readers only submitted programs.

Alex Bell's, in Pascal, searches all variations two moves deep, and hence strictly speaking should be disqualified, since a "pattern-based" program was asked for. His argument, however, was that for so small a depth, brute-force search can be as economical as a pattern-based approach.

Evidence that this is not so will be presented in the next Chesslab, together with a report on the other entry, a Basic program submitted by David Broughton.

Production control systems survey

PRODUCTION control systems are the subject of a comprehensive survey* now available from Computer Guides, the firm that is part of the same organisation as the monthly magazine, Which Computer?

The bulk of the survey, nearly 260 pages, is devoted to detailed descriptions of about 80 production control packages, all of which are available on one or several different types of computer, or on a bureau basis.

The Information provided Is based on questionnaires completed by about 70 suppliers of computer-aided production control systems, including most well-known computer manufacturers, about a dozen big bureaux and more than a dozen software houses.

The questionnaire Included sections on the history of the product, definitions of the configurations on which It will run, initial and recurring costs of running It, the functions It provides, the type of manufacturing to which It is suited and a software section giving information on the language It is written in and the documentation and support provided.

Functions asked about In the questionnaire Included sales orders processing, stock control, requirements planning, demand forecasting, shop order control and shop loading/capacity planning.

Typical questions asked on the subject of requirements planning included how product breakdowns were handled and whether the system incorporated facilities like batching techniques and order recommendation. Questions on shop loading/capacity planning included which parameters were used to establish priorities and the circumstances under which critical situations were reported.

The survey also Includes brief case studies on the Implementation of production control systems by four companies each manufacturing a different type of product — scientific instruments, hydraulic pumps and valves, precision machine tools and digital voltmeters.

Other Information Includes the names and addresses of about 80 production control system consultants.

*Guide to Production Control Systems 1979/80, £24, 260 pp. Computer Guides Ltd, 30-31 Islington Green, London N1. 01-359 7481.

Philips switch

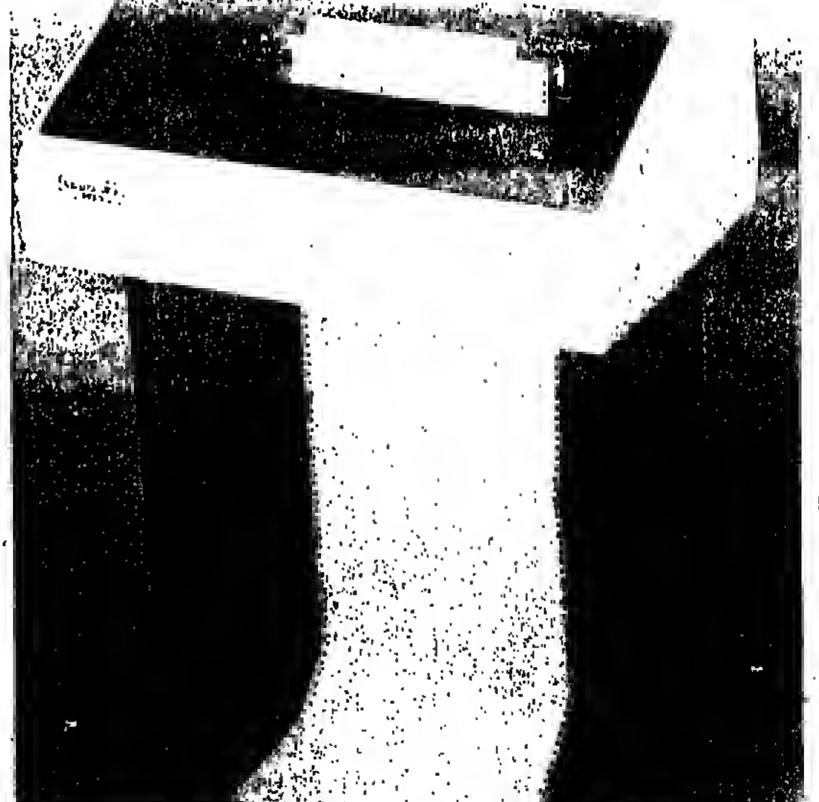
PHILIPS has introduced a multi-microprocessor based message switch for up to 40 lines, which It claims can be economic with only two or three external telex lines. Based on up to five Zilog Z80 microprocessors the switch, called the DSX-40, will be marketed In Western Europe at prices starting around £25,000. In the UK It will be marketed by Telephone Rentals, but first deliveries are not expected until next year.

Generators

A SERIES of program generators has been developed by Gifford Systems, of Hitchin, Herts, for users of the Filetab-based language RPL on DEC machines. The utilities create master files, update programs, and menu screens.

UKS has Centronics 6000 Series Line Printers EX-STOCK

Available immediately from Cable & Wireless UK Services Ltd.



Models 6150, 6300 & 6600, configured to the standard Centronics parallel input specification, with the following options:–

- ☐ Front bottom form feed.
- ☐ UK64 ASCII print band.
- ☐ 2 channel direct access VFU.
- ☐ 132 Column printing.
- ☐ Paper jam sensor.
- ☐ Audio alarm.
- ☐ Casters.

Complete Unit Prices

- ■ Model 6150* £3425
- ■ Model 6300 £4177
- ■ Model 6600 £5579

(*No audio alarm or paper jam sensor and is rear fed)

Also available. The following 700 Series Matrix Printers:

	Basic Price
■ Model 700	£1022
■ Model 701	£1241
■ Model 702	£1494
■ Model 703	£1916
■ Model 761 RO	£1371

For further information contact Mr Len Watts at the address below:

UKS Cable & Wireless UK Services Ltd

83 Blackfriars Road, London SE1 8HA. Tel: 01-928 0261. Telex: 915453

market place

Contact Steve Bass

For Advertising Rates PHONE 01-261 8293

RISK CAPITAL
available
FOR DEVELOPMENT OF NEW IDEAS
WRITE: AUGER INVESTMENTS LTD.
P.O. Box 76, Normandy House
St. Helier, Jersey, Channel Islands

"Top of the Floppies"
Standard and mini Diskettes.
Extends media and headlife.
Certified 100% error free.
Highest quality surface.
Competitive prices.
Superior performance.
Configuration available for single and double density.
Single and double sided hard or soft sectored
Diskettes from CPU PERIPHERALS Sheugart Distributors
Copse Road, St Johns, Woking, Surrey GU21 1SX
Telephone 04862 73883 Telex: 859592

PORTSMOUTH CITY COUNCIL
FOR SALE
2316 Disk packs, disk and card cabinets etc. Offers are invited for the purchase and removal of the above equipment.
Further details and quotation forms are available from the Senior Purchasing Officer, Supplies Section, City Treasurer's Department, Civic Offices, Guildhall Square, Portsmouth (Telephone 0706 22251 Ext 4405 or 4406).

FOR SALE
ICL SYSTEM TEN MODEL 220. Latest specification, fully maintained.
20K CPU, VDU and MTIOC, 2X8MB Disc Drives. 125 lpm Printer.
Contact Mike Harrison
Safe Computing, Wokingham
Tel: (0734) 781212

CONTRACT or PERMANENT
We are the Specialists!
ANALYSTS PROGRAMMERS OPERATORS
VDU/KEY PUNCH OPS DATA CONTROLLERS
FOCUS Computer Services Limited
01-487 5781
(emp.agy)

PDP 11/04 /34 /60 /70 COMPUTER SYSTEMS
COMPETITIVE DELIVERY & PRICES
FAST DEC!
FROM SYSTEK
HR HOUSE, HIGH ROAD
NORTH FINCHLEY
LONDON N12 0AZ
01-349 2911 TELEX 28227

FOR SALE
1 Bank of IBM 2314 Disk Drives (8) and Controller (60 cycle) and 1 spare.
Excellent opportunity for spare parts.
Telephone:
01-248 6328 Mr. Dean

Secure Storage for Backup Tapes Microfilm, Disks, & Microfiche
Hard Copy Deliveries Undertaken
01-727 3866/7/8
30 Bridstow Place, London W2 5AF
WACKENHUT

WANTED
To purchase, all user IBM, ICL computers.
J. & M. COMPUTERS
The Stables, Plains Road
Great Totham, Essex
Tel. Maldon
(0621) 892333

FOR SALE
Burroughs TC5000, 8711, AE500 DEC PDP 11/34
IBM SYSTEM 32, 3/8, 3/10, 5496. OLIVETTI P6080, P852.
EDB EQUIPMENT LIMITED
0783 283818 Tx. 537753

leasing? buying? selling?
CRB
Computer Resale Brokers International Ltd
Havers House Holly Road Twickenham
Tel 01 891 0711 Telex 935127
CWT CRB

tap
SERVICE BUREAU
Central London
Providing Batch RJE/TP facilities for OS and DOS users at attractive rates.
ITEL AS5-3 3072K
OS/MVT/HASP
VM/CMS
PHONE
01-242 8283
Time and People Limited

Speedsort 11
RSX 11M/D • IAS
- UP TO 15 KEYS
- INTEGER, REAL, ASKI, EBCDIC, RAD50
- ALL FCS FILE TYPES
- £300/YEAR RENT FULLY WARRANTED
- FORTRAN-CALLABLE OPTION
- 1-MO. TRIAL COPY £25 (MAG TAPE)

Hourds Computing
7-8 Mill Street
Stafford ST16 2AJ
Tel: 44221

FOR SALE
ICL 1904 S SYSTEM
Complete system with discs, types, card reader and train printer System available July/August.
For further information please contact **Mr. R. Berns, Piper Smith and Basham on 01-828 8685.**

DIGITAL DECDATA SYSTEM
310 2-drive, complete with Decprinter for sale. Just over 2 years old and in perfect condition. Reason for sale is that we need a larger machine.
Offers to: Administration Manager, Apollo Freight Ltd., 308 London Road, Hadleigh, Essex. Tel. Southend 553244.

FOR SALE
DEC PDP IL/34 Equipment
4 x 16 K core memory
2 x RK06 disk drives
1 x M7850 parity control module
2 x D11s
All unused or minimal use.
Contact N. Garland
051-227 2828 Ext. 264

LOOK AT THE CROWD IN OUR MARKET PLACE
Our Market Place feature (today on pages 12/13) enables you to reach a vast 82,000 circulation of whom no less than 91% personally request their copies. No wonder we attract more display advertising than any other computer journal. 35% of all computer ads appear in our pages — and Market Place is the most cost-effective of all for leasing, second-hand hardware, maintenance services, wholesale goods and contract staff. . . The rates are:
3.35 s.c.c. £9.35
36-98 s.c.c. £7.70
99 s.c.c. and over £6.05
Series discounts: 7—5%, 13—10%, 26—15%, 52—20%
COMPUTER WEEKLY

TWO OLIVETTI P603 MICRO-PROCESSOR ACCOUNTING MACHINES
Complete with MLUs and nine cartridges fully serviced and operational. standard software includes — sales ledger, weekly payroll and analysis function
Offers over £2,000 for complete system buyer collects from
SURREY NURSING AGENCY
7-8 Stockford House
Mulgrave Road, Sutton, Surrey
Tel. No. 01-643 7001

HIRE A PET MICRO FOR *JUST* £5.00
For personal, educational and small business use. Hire a PET from £5/day or £25/week.
ESSEX COMPUTER SERVICES
Tel: Canvey 61663 (anytime) or 61926 (office hours)

A Complete Business FOR SALE in the Luton area
A punch-card bureau with paper-tape facilities and an annual turnover of £30,000.
The sale includes a 21-year on a suite of offices (plus carpets & new decor), consisting of approx. 950 sq. ft.
ANY REASONABLE OFFER CONSIDERED
Apply Box 1037, Computer Weekly
Dorset House, Stamford Street, London SE1 9LU

KEY OPERATIONS ASSISTANCE LTD
CONTRACT
★ OPERATORS ★
★ PROGRAMMERS ★
★ PUNCH OPERATORS ★
LEADING SUPPLIERS OF CONTRACT OPERATIONS PERSONNEL THROUGHOUT EUROPE
SAVE TIME AND MONEY CALL US FIRST
LONDON 01-439 755/1
MANCHESTER 061-833 9355/7
EUR/OPS EUR/OPS
27 NOEL STREET LONDON W1

NEW SPRAGUE POWERLYTIC CAPACITORS
All Fully GUARANTEED

Type 36DX	51,000 MFD X 75V	£4.50 Each
Type 36D	42,000 MFD X 10V	£3.50 Each
Type 36D	32,000 MFD X 25V	£4.00 Each
Type 36D	18,000 MFD X 25V	£2.00 Each
Type 36D	7,000 MFD X 6V	£1.00 Each

Discounts available for large quantity orders and prompt payment.
All orders for less than 20 pieces will be subject to a £2.50 post & packing charge.
Orders to: Dept. C.W., FARCOM SUPPLIES Ltd., P.O. Box 127, 54 Forgate St., Worcester. WR1 1DX.

WEBSTER D/P SERVICES LTD.
FOR USED DP EQUIPMENT
BUY OR SELL THROUGH WDP
NEW DE LUXE 80 COLUMN HAND PUNCHES (EX-STOCK)

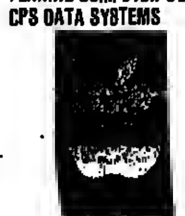
01-464 9011
WEBSTER D/P SERVICES LTD.
85 WIDMORE ROAD, BROMLEY
KENT BR1 3AA

All the Organisations listed below are professional Apple Dealers:
- ★ We can offer you realistic and sensible advice about the type of configuration to suit your needs, be it in business, education, research or finance.
- ★ Apple has so many exciting hardware and software options.
- ★ Make the right choice with our help.
- ★ Our strength is after sales support.

THE U.K. APPLE DEALER GROUP

MIKE STERLAND	PERSONAL COMPUTERS LTD.	(01) 283 3381
TIM KEEN	KEEN COMPUTERS LTD.	0602 683254
TONY COLLINS	LYNX COMPUTERS	395 2672

ADAM WISEBERG	COMPUTER WORKSHOP	061-832 2289
ALAN WOOD	DIGITUS	01-636 0105
TREVOR WILLIAMS	PADMEDE COMPUTER SERVICES	025671 2434
ALAN WILLIAMS-MORGAN	HOLSOUTH LTD.	0433 30922
IAIN REES	CCS MICROHIRE	01-444 7739
DEREK BELTON	WOODS OF AMERSHAM	024-03 22186
TREVOR BROWNEN	CRYSTAL ELECTRONICS	0803 22699
PETER McNAUGHTON		073 088267
STANTON SMITH	MICROSOLVE COMPUTER SERVICES LTD.	(01) 951 0218/0219
TOM PIERCY	TOPMARK COMPUTERS	0480 212563
ROBIN WOODS	ISHERWOODS PERSONAL COMPUTER SYSTEMS	0582 424851
BRUCE EVERISS	MICRODIGITAL LTD.	051-227 2535
TONY MANTON	EUROCALC	636 8161
CLAUDE COWAN	CAMBRIDGE COMPUTER STORE	0223 68155
MR. A. C. GRANT	MICRO COMPUTER CENTRE	01-876 6609
GEORGE SINCLAIR	BATE MICROSYSTEMS	0382 74380
JEFFREY WOOLF	PROROLE LTD.	0702 88183
MR. A. BAILEY	PIED PIPER (MUSIC) LTD.	021-550 5947
TONY INGLE	INTEX (DATALOG) LTD.	0642 781193
HUGH NICKLIN	YE COMPUTER SHOPPE	0423 501133
JOHN PAGE	PIPS COMPUTER SERVICES	0632 482984
STEVE COOPER	PENNINE COMPUTER SERVICES	0532 480760
MR. A. BOLTON	CPS DATA SYSTEMS	021-707 3866



UK APPLE GROUP
UK Apple Group

WARWICK FRASER & CO. LIMITED
For Sale on Immediate Delivery Ex-stock

IBM 029 PRINTING CARD PUNCHES	£1745.00 plus VAT
IBM 029 (C22) INTERPRETING CARD PUNCHES	£2250.00 plus VAT
IBM 558 VERIFIERS	£350.00 plus VAT
IBM 082 CARD SORTER	£345.00 plus VAT

All with IBM Letter of Maintenance
ALSO

ICL 80 COLUMN HAND PUNCHES	£85.00 plus VAT

All types of Second User Forms Handling Equipment
Telephone No. 01-720 0468

IBM IBM IBM
029, 026, 059 EX-STOCK
- ★ All fully refurbished
- ★ Free warranty
- ★ Guaranteed maintenance
- ★ Various code options available

Tel. 0268-710292
C.D.L. COMMERCIAL DATA LTD., Downhall Road, Rawreth, Wickford, Essex.

HEXAGON computer services
01-439 3671
145 WARDOUR STREET LONDON W1V 3TB.
Contract & Permanent recruitment
Total DP Support at its best
Programming. Operating
Data Preparation. Systems
Data Control. Technical Support

OPERATORS CONTRACT AND PERMANENT
FOR A PROMPT SERVICE PHONE 01-439 6481 NOW
and speak to a top professional in an established company
(24-HOUR ANSWERING SERVICE)
EFFECTIA GRAVIS

Licence No. SE(A)62
EFFECTIA GRAVIS
Personnel Consultants 01-439 6481
National House 60 Wardour Street London W1V 3HP

Knight is right for contract staff
Knight Computer Services Ltd.
14 Old Park Lane, London W1Y 4NL.
Knight 01-491 4706
Staff Services Division of BOC Datasolve Group and a member of Computing Services Association

DEC DEC DEC DEC DEC
PDP11/34 and 11/04 Systems and Peripherals for immediate delivery. Also various Refurbished PDP11 and 8 Systems, and Modules from stock.
USED DIGITAL COMPUTERS IN WORKING ORDER TO CLEAR
Dec PDP 8A 16K core £1,500
Dec PDP 8L with thermionic T6000 7 track industrial mag tape drive with controller and A-D converter £1,500.
Dec PDP 8I in excellent condition £1,000.
Dec PDP 1105 16K memory 5¼ inch Box £1,600.
Dec PDP 1105 28K memory in expansion chassis £2,800
S.K. COMPUTERS SYSTEMS LTD.
Stevenage Road, Hitchin, Herts.
Telephone (0462) 35267
Telex: 826715 S.K. SYS.

FOR SALE
IBM 5412 CPU 88K.
IBM 5203 Printer 300 LPM
IBM 3741 Datastation Model 002
IBM 3742 Dual Datastation 001
Free delivery your premises early 1980
S. W. Wernerfelt A/S
Vandtaarnsvej 83
2860 Soeborg/Copenhagen
Denmark
Tel. 451 1 677301
Telex: 16801

"GIVE US THE . . .
tools, food clothing, heating — all cost money, but all are involved in caring for children — and much more
If you give us — not tools — but your computer waste we can do the job of caring for over 5 000 children who need love care and security
CAN YOU HELP?
Please contact
Paul Hanison
National Children's Home
85 Highbury Park
London, N5 1UD
. . . we'll do the job."

Appointments

THE INDUSTRY NEWSPAPER FOR DP PROFESSIONALS

Appointments
Appointments
Appointments

COMPUTER WEEKLY

Classified Department, Dorset House, Stamford St, London SE1 9LU

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address

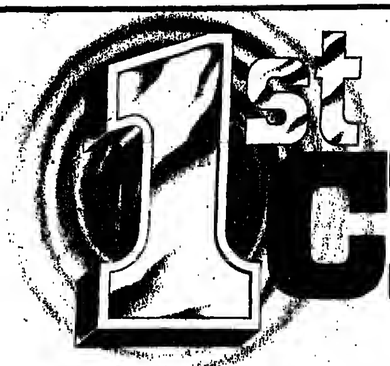
Classified Rates: £10.00 per sc. Series 7 = £9.00 11 = £8.00 26 = £7.00 52 = £5.00

Copy Deadline: 5.30pm Monday prior Thursday publication date. Complete artwork up to 12 noon Tuesday. Advanced space reservation is advisable

LONDON
Assistant Classified Manager:
Chris Prier 01-261 8028
Eddie Farrell 01-261 8097
Mark Williams 01-261 8019
Mark Pulver 01-261 8174
John Farrar 01-261 8098
Ken Walford 01-261 8454

MANCHESTER/GLASGOW
Owen Kelly 061-872 4211
Geoff Aiken 061-872 4211

BIRMINGHAM/BRISTOL
Basil McGowan 021-356 4838



1st CHOICE

Programmers and analysts – your contract for success

U.K.		OVERSEAS	
Ventek Datashare	N. London/Middx.	PDP Fortran/Assembler + Realtime	Brussels
IBM OS Cobol + Ventek Datashare	N London	PDP Mumps	Holland
IBM Systems Analyst	N London	PDP Basic + 2	Holland
IBM OS Cobol + tMS	Kent	PDP Basic + 2	France
IBM DS COBOL + DL/1	Kent		
IBM OS PL/1 + GIS/DL/1	Herts.		
PDP RSX11 Macro 11	Warwicks		
PDP RSX11 Coral 66	W. London		
Coral 66	S. London		
Honeywell Cobol + IDS	N London		
ICL 2900 Analysts & Progs	London		

Call Richard Kaluzyneki, Neil Williams or Suzy Gillam for details

VENTEK DATASHARE EXPERIENCE?

We have several immedlete end future vecancies for people with good Ventek experience.
If you have e permenent job or are aveileble now we will be happy to discuss the opportunities ewaiting you. And we ere pert of the BOC Group — Vontek users themselves.
Call Neil Williams, Suzy Gillam or Richerd Kaluzynski.

Operators – if you've got the skills, we've got the contracts

SHORT-TERM CONTRACTS — VARIOUS
TOP OPS. Immediate start for Operators interested in short-term contracts. To cover summer holiday periods. Call us now!

ICL 2903 OP. — SOUTH KENT
NEW RELEASE. Immediete ehort-term contract. £160 p.w. Ring Jane, June or Sue.

HONEYWELL OS 2000 OP. — DUBLIN
NEW RELEASE. 18 month contract. Start beginning August. £160 p.w. nett. Call in now for further details.

EXPD. 1900 GIII — ALL AREAS
NEW RELEASE. Operators end Dete Controllers required for various assignments. Long end short term contracts. Excellent retee. Ring now!

NCR OPERATORS — LONDON
CONTRACT. Raquired for immediete short term contracts. Excellent retes. Cell now.

BURROUGHS 1700 OP. — LONDON
CONTRACT. Immedieto two-month contract. £145 p.w. Cell Jene, Sue or June now!

Permanent Career Opportunities for Operators

IBM OS/VSI — ESSEX
Our client is looking for 5 operations staff — 2 Snr. Ops. and 3 Ops. to work a 2 shift system on their large IBM site. If you have up to 2 yrs. OS/VS1 or OS/VS2 exp. and would like exp. on the letest IBM equipment, you could benefit from perks such as up to 4 wks. hole., subs. restaurant and pension scheme.
SALARY: £3,000-£4,500. Call Elaine or Sally.

HONEYWELL 2050 — ESSEX
An Operetor is roquired to work deys only on e Honeywell 2050. The successful applicant will have e minimum of 1 yr. OS 2000 exp. The hours are 9 a.m.-5 p.m. and some o/time. Hols. 20 days. £1 p.w. L.V.s which buys lunch in subs. canteen. Possibility of going into programming at a later stage.
SALARY: £4,000 neg. Call Sally or Elaine.

GRADUATES WANTED NOW! FOR TRAINEE VACANCIES IN CENTRAL LONDON
If you ere e recent gredusta, eged about 25, we mey be eble to help you.
RING US NOW

ICL 2960, 2 x ICL 4/72 — SUSSEX
A well-known company situated in thie picturesque part of Susaex ere currantly looking for an Operetor to work e 32½ hr. week in 3 shifts. If you have 18 mths.-2 yrs. ICL System 4 or ICL 2900 exp. you could be ideal, but co. are willing to train those with IBM 370 or 360 or large ICL 1900 exp. There is also an opportunity to get into programming. Perks incl. 4 wks. hole. rising to 5 wke., subs. canteen and pension scheme.
SALARY: £4,400 (under review). Call Elaine or Sally.

BURROUGHS B1860 — W.8
A menufacturing compeny in W.8 ere looking for en Operetor with 1-2 years' MCP exp. This is e daye-only position — hours 9 a.m.-6.30 p.m. with some overtime. Company benefits include: 19 deys hole., contrib. pension scheme, 25p L.V.e daily, S/T loen after 6 months. Possible opportunity to learn programming.
SALARY: £4,500-£5,500. Call Sally or Elaine.

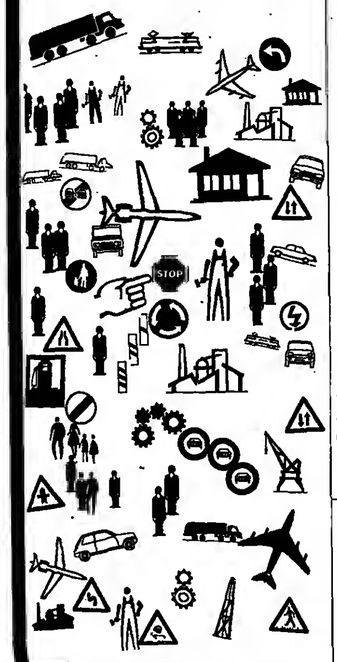
IBM 3031 — S.W.1
Our client, e well-known Oil compeny in Victoria, ie recruiting senior operetions etaff, i.e. Snr. Ope./Shift Ldr. If you heve 4-5 yre. exp., incl. eupervisory, thie job could be for you. The inetallation runs under OS/VS1 on 12-hour shifts. Benefits include: 4 weeks hols., free life eesurance, interest free seeson ticket loan end e contrib. pension scheme.
SALARY: £5½-6K (Snr. Op.) £6-7K (S/Ldr.). Call Eleine or Sally.

Knight

Phone anytime or for an application form leave your name and address with our answering service.
All vacancies are open to both male and female applicants.
Knight Computer Services Ltd.,
14 Old Park Lane, London W1Y 4NL.
Staff Services Division of BOC Distributor Group and a member of Computing Services Association

01-491 4706
or when busy 01-439 3411

MYRIAD



DATA PROCESSING CONSULTANCY WITH A PROFESSIONAL EXPANDING SOFTWARE HOUSE

GREATER LONDON

ANALYST/PROGRAMMERS AROUND £7K

Progressive minded COBOL or PL/1 programmers with three to four years' experience, these are exciting opportunities for you to gain more varied project and business experience.

HOME COUNTIES

PROGRAMMERS AROUND £6½K

If programming is your expertise then further your career by obtaining experience of the latest client hardware, enabling you to progress your development in line with the Computing business.

CLIENT

Our client is a friendly, employee-conscious computer consultancy. They offer a variety in your career prospects which will give you unrivalled opportunity to use your potential to best effect. Each of these positions offers the opportunity to participate in an attractive profit share scheme, and of course beneficial travelling expenses are payable for travel to client sites.

Ref. SW1 1207

MYRIAD APPOINTMENTS LIMITED 30 Fleet Street London EC4Y 1AA 01-353 0981 24 HRS.

Analysts & Programmers

A Double Bonus

The Latest Technology

* IBM 3032.
* 3790 distributed processing.
* 3730 word processing.
* Extensive T.P. network.
* Interactive programming.

The Benefits of East Anglia

* Beautiful rural and coastal area.
* Every recreational facility.
* Only 45 minutes from London by train.
* Superb modern offices.
* Excellent salaries and working conditions.

We are the Systems Services Division of a leading International Insurance Broker. A recent merger and our successful development programme have resulted in plans for expansion of both our U.K. and European development departments. Opportunities now exist for both Analysts and Programmers to join in our exciting future.

SYSTEMS ANALYSTS

With a minimum of 3 years experience including a programming background and, ideally, incorporating a knowledge of IBM hardware and teleprocessing.

PROGRAMMERS

With a minimum of 12 months experience in either Assembler, PL/1 or COBOL.

If you meet the qualifications and more importantly, have the drive and ambition to succeed in a challenging environment phone Mike Hodder on Colchester 69191 or write to: Mrs. J. Smith, Personnel Officer, SEDGWICK FORBES BLAND PAYNE GROUP, Grove House, Witham, Essex.

SEDGWICK FORBES **BLAND PAYNE**

COMPUTER SHIFT LEADER
SUSSEX

A vacancy has arisen with a well-established and expanding electrical company in a beautiful part of Sussex

This might suit either a current shift leader or an operator with two years + experience wishing to take the next career step.

Reporting to the Chief Operator the Shift Leader will be responsible for running an on-line Production Control System with 31 terminals plus some batch work. Shifts of 8-5 and 4-12 are worked on alternate weeks.

A Burroughs 3700 is the in-house computer but other experience might be considered as the company are about to install a 2930 within a year.

Excellent conditions with a negotiable salary and generous assistance with relocation if applicable are offered. Overtime is available.

For full details and early interview contact:

ata
Pat Radfern
ATA Computer Recruitment
36 The Broadway, Crawley, Sussex
Tel. 0283 514071

FIFE REGIONAL COUNCIL — FINANCE DEPARTMENT SYSTEMS AND PROGRAMMING SECTION

SYSTEMS ANALYST
Salary Grade — A.P. V £6,588 / £6,088 (inc. supplement)

Due to internal promotion a vacancy exists for a systems analyst to join one of our Project Teams.

Applicants should have at least 2 years' programming experience and systems design experience. They should be able to demonstrate an ability to work in a team environment. A professional qualification would be an advantage.

COMPUTER PROGRAMMER
Salary Grade — A.P. I/IV £3,861 / £6,403 (inc. supplement)

Due to an internal promotion a vacancy exists for a computer programmer to join one of our Project Teams.

Applicants should have at least 2 years' experience of programming in COBOL. A wide variety of local authority work is undertaken on behalf of the Regional and three District Councils. Career prospects are excellent. Planned recruitment to posts in all salary grades. Canvassing directly or indirectly will disqualify.

Application and further details may be obtained from Regional Personnel Officer, Fife House, North St, Glenrothes (tel. Glenrothes 754411, Ext. 245 & 6) to whom completed form should be returned not later than 30th July 1979. Please quote Ref. Number RP/49/58/CW.

Manchester

Technical Authors
(to £6,500)

We are looking for a few highly competent Technical Authors to join computer design teams working on advanced digital equipment and software projects. They will be expected to work with a minimum of supervision, gathering information as projects evolve and producing finished technical literature.

Applicants, male or female, should either be experienced technical writers or have several years' industrial experience preferably in digital electronics or programming and the proven ability to write clear concise English.

The posts carry attractive salaries in the range £4,000 to £6,500 and a productivity bonus scheme is in operation. Relocation expenses are available for staff coming from outside the area.

Ferranti Computer Systems Limited is a leading British manufacturer of real-time computer systems with a world wide reputation for quality and reliability. The vacancies are at our Wythenshawe Division on the South Manchester/Cheshire border within easy reach of open country and good residential areas.

Apply to Mr. W. L. Robinson, Ferranti Computer Systems Limited, Simonsway, Wythenshawe, Manchester M22 5LA quoting reference 79WD7/CW.

FERRANTI
Computer Systems

Technical Group Manager
Salary Range £7,750 to £9,088

Our Technical Design Branch located in Nottingham requires a Technical Group Manager who will be responsible for all design and implementation aspects of a range of computer projects.

The computing equipment used includes ICL 2980 and IBM 360/370 mainframes and a number of mini-computers, using batch, RJE and on-line facilities for system development and production processing.

This position offers an excellent opportunity to control a wide variety of projects and requires extensive practical experience of all facets of computing with particular emphasis on technical design.

There is a contributory pension scheme and the transfer of existing pension rights can, in most cases, be accepted. There are also free and reduced rate rail travel facilities.

Applications stating age, education, qualifications and experience should be sent to:-

Headquarters Staff and Services Manager, British Railways Board Headquarters, 222 Marylebone Road, London NW1 6JJ. (quoting reference RB201).

McDowell, Knaggs

COMPUTER RECRUITMENT, TRAINING AND CONSULTANCY

WORCESTERSHIRE, GLOUCESTERSHIRE
S. WALES, W. MIDLANDS

WOULD YOU LIKE A PROGRAMMING OR SYSTEMS JOB THAT PROVIDES A ROVER 3500 AS A COMPANY CAR?

Well, we don't know of any, so if you do give us a ring and let us know where they are — whilst you are there why not contact us anyway if you are interested in seeing what's available on the market. Our first class services can work for you as well as employers — we can't possibly advertise all the vacancies and why pick 2 out of 200 when those two might not apply to you anyway.

If these geographic areas interest you, telephone DON KNAGGS now on WORCS. 427077 (BEWDLEY 400036, evenings after 7 p.m. and w/e) or write to THE MOUNT, 1 ST JOHNS, WORCS.

UNIVERSITY OF ESSEX
Department of Electrical Engineering Science

Senior Research Officer

to work on all aspects of microprocessor based projects in the Essex Electronics Centre. The Centre undertakes a wide range of projects concentrating on the application of electronics to problems encountered in industry.

Candidates should be qualified in electrical engineering or computer science to degree level and some practical experience in industry would be an advantage, but not essential. This post offers a chance to recent graduates to be involved in real industrial problems while benefiting from an academic environment. Salary will be in the range £4,332 to £7,145 according to experience. Appointment tenable immediately.

Applications including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/86/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained by 2nd August, 1979.

Bored with your present job?
Then come and work for

XENOTRON

We are a small independent company, manufacturing a specialised display terminal for the newspaper industry. Opportunities exist for intelligent, self-motivated people to join our development, production and service departments as:

Development Engineers
Production Test Engineers
and
Field Service Engineers
and the software department as
Installation Programmers
and
Development Programmers

Engineering applicants should have a good background in both Analogue and Digital Electronics, and familiarity with OLC LSI/11 and/or Zilog Z80 processors would be a distinct advantage.

Installation Programmers should ideally have experience in both computing and typesetting, but applicants with experience limited to either field will be considered if they can demonstrate an ability to acquire the necessary competence in the other field. Development programmers should have specific and solid experience of programming Z80.

All jobs offer scope for personal development and foreign travel (Europe and USA) combined with the satisfaction of working for a small closely knit company situated in a very pleasant area of rural England.

Please write or telephone to —

Tiffany Threlfall
Xenotron Limited
Vinces Road
Diss, Norfolk IP22 3HH
Telephone (01379) 4611

for an application form and to arrange for an interview.

WEST YORKSHIRE

Metro

WEST YORKSHIRE PASSENGER TRANSPORT EXECUTIVE

SYSTEMS ANALYST ANALYST/ PROGRAMMER
£6452-£6960

ANALYST/ PROGRAMMER
£5526-£5958

The Executive is a user of the West Yorkshire Joint Computer Committee's IBM 370/158 operating under OS/VS1.
Processing of the Executive's systems is from several remote job entry terminals, and interactive terminals are used for program development.

SYSTEMS ANALYST — Must have had experience in the preparation of a major system, and been involved from feasibility study to systems design and implementation including user training.

ANALYST/ PROGRAMMER — Two years' programming experience in COBOL, and a working knowledge, or desire to learn systems design and implementation. Applicants with other than IBM experience will be considered for re-training.

The Company — The Executive offer the following benefits; modern working conditions, canteen facilities, 32 days' paid holiday, concessionary travel and a good pension scheme.

The Location — Wakefield — Cathedral City of West Yorkshire close to M1 and M62 within easy reach of National Park and East Coast Resorts. Assistance with relocation expenses in appropriate cases.

Application forms are available from the Personnel Manager, WYPTE, Metro House, West Parade, Wakefield WF1 1NS. (Tel. 0924 78234, Ext. 284) to be returned no later than 30th July, 1979.

NORTH WEST THAMES REGIONAL HEALTH AUTHORITY

HEALTH SERVICE COMPUTING

Career openings have arisen at the Computer Centre based at New Southgate.

Ref. No. 607	**SENIOR SYSTEMS DESIGNER** Salary Scale £9,313-£9,370	Pay award pending
Ref. No. 608	**SYSTEMS DESIGNER/ PROGRAMMER** Salary Scale £4,775-£5,680	
Ref. No. 609	**PROGRAMMER** Salary Scale £3,806-£4,775	

Salaries inclusive of £354 London Weighting

New entrants enter at the minimum of the scale.

Equipment consists of an ICL 1904S with 10 EDS 80's running under the George 3 operating system with communications facilities, an NCR microfiche processor and Radlon key-to-disc system.

As well as the Payroll, Accounting, Medical and Scientific applications, staff are required to support a variety of mini-computers installed in hospitals and laboratories around the Region.

The main programming languages are COBOL, FORTRAN and PLAN. Appropriate training will be given as required. Flexible system around a 36-hour week.

Applications forms and further particulars from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR (Telephone No. 01-262 8011 Ext. No. 281) quoting the appropriate reference number.

Closing date: 27 July, 1979.

JBA

Electronic Office/Mailing System
Central Holland — **gross to £20,000***

A new development team is to be formed by one of the worlds' leading software houses - Computer Sciences Europe - to design and develop a complete word/text processing system. This is real "leading edge" technology, representing a major push into the automated, electronic office age.
The range of software development experience required from the team as a whole, is as follows:- multi-tasking; data/file management; network planning; word/text processing; graphics; data comms. involving protocols such as SDLC or HDLC.
*On moving to Holland, the top 35% of gross salary is exempt from tax - extremely valuable! If you would like to contribute to the project and would like a permanent, career-orientated position into the bargain, phone now for more detail.
Contact: Andy Wright

Business Analyst (Minis)
Berkshire — **Neg £8,000 + Benefits**

This is an outstanding opportunity for a successful Analyst/Programmer to move on to pure Business Analysis. You will be given the chance to design and implement new and extremely complex financial/accounting systems around a worldwide network of minis. This will necessarily involve overseas travel (to the U.S.A. and Far East) to a limited extent - ie NOT plane-hopping or extended stays abroad - to help implementation at each site.
Whatever your hardware background, if you understand the concepts behind networked minis and have a sound accounting systems knowledge, this represents a real career building move.
Company benefits include an excellent pension scheme plus medical (like BUPA/PPP) insurance and free life assurance schemes. Generous relocation assistance is also available if required. Additionally, the initial starting salary will be reviewed within 6 months.
Contact: Andy Wright

GERMANY

Consultants
NETT £20,000 to £32,000

Our client has an immediate need for real in-depth expertise of VTAM, TCAM, and IMS systems, e.g. not as user or developer of associated applications. Experience of data communications or SNA is an extra advantage.
The successful candidates will be fully conversant with technical internal software, de-bugging and tuning. The consultancy status truly reflects the level of the positions, where technical knowledge will be sought and ability fully utilised. Long term prospects and high rewards are offered.
Contact: Mike Creamer

Analyst Programmer
Midlands — **c. £7,000**

A large engineering organisation with world wide data processing activities wishes to recruit an Analyst/Programmer to join an existing systems development group.
Applicants should have at least three years in commercial applications development, ideally as a senior programmer, with some recent design experience. Knowledge of IBM 370 systems is essential, INS and DL/I experience is desirable.
This is an outstanding opportunity for a professional to be involved in the implementation of a multi-national data base.
For further details and an informal discussion
Contact: Jim Baker

INSURANCE COMPANY

Systems Analysts
South of England

Salaries up to £8,000 + mortgage subsidy + non-contributory pension + free permanent health scheme + low interest loans + subsidised canteen and sports/social club + all relocation expenses + other benefits.
A very attractive prospect for career-minded Analysts, keen to progress in a growth-orientated modern company putting in database and TP systems, promising exciting design and development work well into the 1980's.
We are keen to hear from Analysts who have a sound business background, a good knowledge of COBOL and experience of system design over two to three years, ideally in an accounting, financial or banking environment.
Contact: Mike Creamer

Operations Manager
West London — **To £5,500**

In order to successfully implement the installation of a new mini computer, our client is now seeking an Operations Manager to be wholly responsible for day-to-day running of the site. The principle areas of responsibility will be scheduling - screenmix work flow and supervising a staff of production/data controllers.
However, the successful candidate can look forward to progressive involvement in new systems development.
Applicants must be able to show a sound background in all aspects of computer operations and control, and have the stature and self-confidence to represent the data centres interests effectively, at all levels.
Contact: Margaret Stevens

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W.1. Tel: 01-491 4478

Spread your wings- with a major U.S. company

Systems Analyst
W. London
To £6250

A U.S. multi-national manufacturing company has a major subsidiary in W. London with an expanding ICL System 10 installation. Due to the rate of growth of the organisation (now £30 million turnover a year) there is a tremendous increase in demands placed on the DP department of a managerial information and inventory control nature.

If you have a minimum of 2 years in OP with one reasonable sized system designed and implemented, then the company will be very interested in seeing you. This could be an ideal opportunity for an Analyst/Programmer who wishes to move up to Systems Analysis work and who can make a major contribution to the planned growth of the installation.

Excellent company benefits include subsidised canteen facilities, contributory pension scheme and contributory life assurance. Relocation expenses will also be generous.

So be a big fish in a small pool and apply now!

UCA
UNIVERSAL COMPUTER ASSOCIATES LIMITED
Recruitment Consultants
Data Express House, 3 Prospect Place,
Heathfield Terrace, Chiswick, W4.
01-995 3883 (01-958 6138 evenings)

MYRIAD

PROGRAMMERS

GAIN ANALYSIS EXPERIENCE

N.W. LONDON **c. £6500**

Using the computing facilities of a medium range IBM computer, exciting opportunities have arisen within our client's installation for programmers to develop their careers in analysis. Joining a young enterprising team of professionals, successful applicants will be encouraged to contribute effectively to the design and specification of projects as well as the programming effort.

The company is a very successful manufacturing organisation maintaining an impressive growth rate over recent years. This growth is reflected in the recent introduction of their new computer and the variety of major systems planned to be developed.

Ideal candidates will be able to offer good commercial programming experience supported by the desire and potential to advance into an analytical role. After induction to the company's commercial procedures and awareness of the data processing standards adhered to, every opportunity will be afforded to applicants to apply their skills in developing systems from broad concepts already planned.

A range of company benefits are associated with these vacancies further enhancing the opportunities available to the career minded professional.

Ref: NI/1207

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

SYSTEMS PROGRAMMER

The Daresbury Laboratory, an establishment of the Science Research Council, situated in the north Cheshire countryside is constructing a Nuclear Structure Facility. Known as the NSF, the project is based on a tandem electrostatic accelerator which will be the largest in the world. When completed it will provide a facility of world standard which will attract users from both the national and international science communities

The NSF machine represents a significant step forward in the technology of this type of accelerator and requires a powerful computer control and monitoring system. It is in fact the first accelerator of its type to be designed with comprehensive integral computer control.

The control system is based on a central Interdata 7/32 computer with up to 10 peripheral Interdata 7/16 computers. A vacancy exists for a Systems Programmer to join a small team of computer professionals designing and producing the software to control this network. Many problems associated with interactive colour displays, plant data handling and the operator interface, made particularly challenging by the distributed nature of the system, remain to be solved and a considerable amount of programming in both high and low level language will be required to complete the system. The post will provide a sound base for a career in computer control systems in general

Applicants must possess a good honours degree or equivalent and experience in systems programming. The appointment will be made either at Scientific Officer or Higher Scientific Officer level according to qualifications and experience on the following salary scales:

Scientific Officer	£2,839 to £4,415
Higher Scientific Officer	£4,101 to £5,448

There is a non contributory superannuation scheme, a generous leave allowance and a flexible working hours scheme. Closing Date: 10th August, 1979

Write or telephone 0925 65000 ext. 487, for an application form quoting reference number DL/644/1/W to:

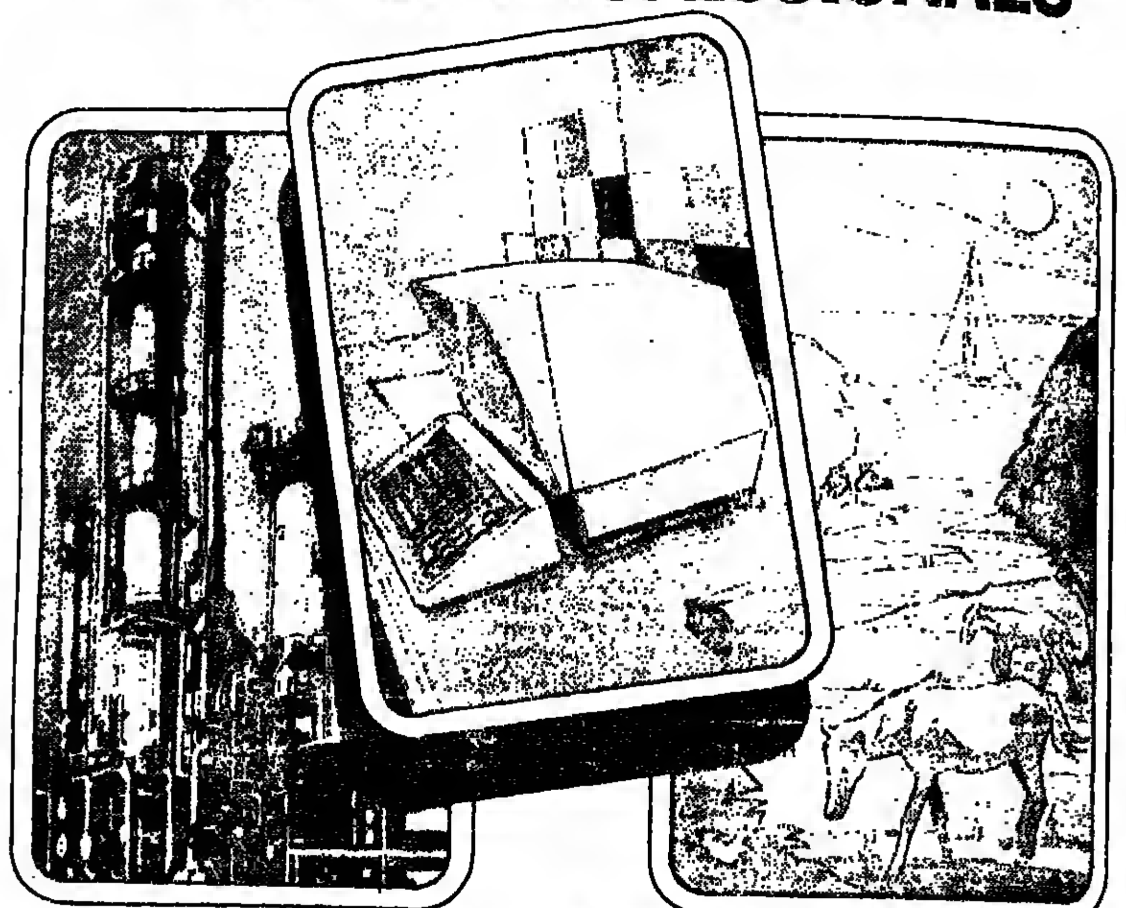
The Personnel Officer
DARESBURY LABORATORY
Science Research Council
Daresbury, Warrington WA4 4AD

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

COMPUTER PROFESSIONALS



YOUR NEXT CAREER MOVE

At Esso Chemical Limited we have just embarked on one of our most ambitious DP projects.

We are taking a fresh look at our approach to information systems on our manufacturing plants using the latest computer technology to create a highly integrated data base. This will be the source of management information and the base for development of advanced applications. The project will use the latest computer hardware and Exxon's worldwide experience of computer project development.

The men and women who participate in this project will be in on the ground floor of this challenging new activity and they will be expected to develop as professionals, with the project.

Senior Programmer

The successful candidate is expected to become a key member of the programming group and should have the potential to lead and co-ordinate projects.

We are looking for a young programming professional with at least three years experience, ideally on a large IBM configuration, who has worked with PL1 VM/CMS and data base applications. A degree in Computer Science, Engineering or a numerate discipline is essential.

Systems Analysts

You will be working closely with users who are engineering professionals, and you should have good communicating skills and the potential to lead a team in the future. A degree in an Engineering related subject is essential with at least two years experience in a manufacturing or technical environment. A programming background would be an advantage.

Communications Systems Engineer

This is a unique opportunity for a proven engineer to take overall responsibility for implementing, commissioning, developing and supporting all communications on site. You should have a degree in Computer Science or equivalent and at least 5 years experience in telecommunications and/or process control software systems. Experience of Process computing real time software systems, or IBM Terminal-teleprocessing systems would be an advantage.

Great opportunities certainly but a great challenge too. You will have a lot of personal responsibility and your ability and effort will be one of the keys to ensuring a successful project completion.

That's the way everyone works at Esso Chemical Ltd. It's part of our management philosophy — to give young people real responsibility, with equally real rewards to match. Which is why the salaries that go with these jobs are really attractive and why our benefits package includes generous relocation expenses to this attractive part of the South Coast which has the Solent on one side and the New Forest on the other. So you can enjoy wide open opportunities in a part of the World that still has plenty of wide open spaces.

To find out more about the opportunities we are offering, telephone Howard Winters, Employee Relations Adviser or write for an application form to: Esso Chemical Limited, Fawley, Southampton. Tel: Southampton (0703) 891822.

Esso CHEMICALS

LONDON E.C.4 **£6K**

THE FINANCIAL TIMES LTD.
is embarking on an ambitious computer project for its Finance Department, involving:

- ★ PDP 11/70—256K
- ★ VT-100s
- ★ RSTS/E
- ★ BASIC PLUS 2

We are looking initially for a

COMPETENT PROGRAMMER

to work closely with the team of software consultants now actively engaged in designing and programming the new systems. He or she will be expected not only to participate in getting systems off the ground, but also in ensuring that they stay there.

We would prefer someone aged between 25 and 30 with at least two A-levels and around two years' experience of BASIC in any of its variants.

If you would like to be in at the beginning of commercial DP development in a rapidly-changing organisation, phone or write to:

Neil Donald, Personnel Manager
The Financial Times Ltd.
Bracken House, 10 Cannon Street EC4P 4BY
01-248 8000

Banking-IBM Midas 34

An International Consortium Bank based in the City, we are seeking a suitably experienced man or woman to be responsible for the installation and subsequent operation of an IBM 34 Midas computer.

In addition to general Data Processing experience, programming ability is required for later modification. Banking experience is preferred.

A competitive starting salary will be paid. Other benefits are above average, including low interest mortgage and profit sharing scheme.

Applications will be treated in strict confidence. Please write initially stating how the above requirements are met and present salary to: **Personnel Manager, UBAF Bank Limited, P.O. Box 188, Commercial Union Building, St. Helen's, 1 Undershaft, London EC3P 3HT.**

UBAF BANK LIMITED

(Small Business Systems)

LONDON BIRMINGHAM

YOUR BACKGROUND

- ★ SUCCESSFUL SALES RECORD IN ONE OF THE FOLLOWING:
  - SMALL BUSINESS SYSTEMS.
  - VRC EQUIPMENT.
  - BUREAU SERVICES.
  - SOFTWARE PACKAGES.
- ★ AGED 25-40. EDUCATED TO 'A' LEVEL.
- ★ SELF-MOTIVATED AND HIGHLY ORGANISED.

SPERRY UNIVAC

When Sperry-Univac launched a new Series of Small Business Systems into the European Market Place during 1978, the company exploited all the technological and marketing skills which have made them the second largest computer manufacturer in the world. The outstanding success of this launch now creates a further need for Sales Executives with a proven sales record.

Sperry Univac has marketing and manufacturing operations world-wide, and promotion from within is usual giving an excellent career path into management.

BENEFITS

- ★ RELIABLE, COMPETITIVE, HIGH PERFORMANCE HARDWARE.
- ★ RANGE OF COMPREHENSIVE SOFTWARE PACKAGES.
- ★ UNMATCHED INSTALLATION SUPPORT SERVICE.
- ★ NATIONWIDE ENGINEERING BACK-UP.
- ★ TOTAL CREDIBILITY OF A MAJOR MANUFACTURER.
- ★ CORTINA OR GENEROUS ALLOWANCE.
- ★ DISCOUNTED SHARE PURCHASE AND BUPA OPTIONS, ON GOING PRODUCT AND SALES TRAINING.

For further details, please telephone 021-643 2317 or evenings/weekends 021-351 4237
Expenses paid, interviews will be held in any of the above areas. Ref. RH/099/CW12/7

IN SWINDON WILTSHIRE

(Full Relocation Package)

We are about to initiate several new projects and are able to offer a number of Business Analysts and Programmers interesting and progressive careers.

BUSINESS ANALYSTS

Starting salaries to £8,000 + non-cont. pension

To assist with the development of new warehouse, stock control and distribution systems utilising mini computers. Genuine prospects of promotion to Project Leader.

PROGRAMMERS

Starting salaries to £6,500 + non-cont. pension

With experience of COBOL to assist in program support and development of TP systems. Real opportunities to progress in programming or to gain experience in analysis.

BUSINESS ANALYSTS

Starting salaries to £8,000 + non-cont. pension

For a new accounts payable system, forming part of a large Management Information system. Use of new techniques possible including data base and minis. Genuine prospects of promotion to Project Leader.

We are a progressive organisation, fully prepared to recognise potential in lesser experienced applicants. So if you have a background in analysis and would like to become involved in problem solving and user liaison we would like to hear from you.

We offer excellent conditions, above average benefits, including a generous relocation package.

Telephone our Advising Consultant,
MARTIN STAINTHORPE ON 021-236 3781 (24 hour answering service)
OR 021-744 1862 (evenings and weekends)

INTERVIEWS TO BE HELD IN BIRMINGHAM, LONDON and MANCHESTER.

SCR

London 01-935 0871 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

Computing Services Association

IDMS DB ADMINISTRATOR	MIDLANDS c. £300	ICL 1900 GEORGE 3 COBOL	WEST COUNTRY c. £220
IBM IMS COBOL	WEST MIDLANDS c. £230	ICL 1900 COBOL ANALYST/PROG	MIDLANDS c. £260
IBM DOS/VS CICS/VS PL1	EAST MIDLANDS c. £230	ICL 1900 COBOL	MIDLANDS c. £220
IBM DOS/VS CICS/VS COBOL	EAST MIDLANDS c. £230	ICL 1900 COBOL	WEST MIDLANDS c. £220
IBM DOS/VS COBOL	EAST MIDLANDS c. £220	UNIVAC 1100 COBOL	WEST COUNTRY c. £220
IBM DOS/VS COBOL	WEST MIDLANDS c. £220	DEC/PDP RSX11M MACRO 11	MIDLANDS £NEG

CONTACT: DAVID LUCAS, MIDLANDS REGIONAL MANAGER, 021-643 8887/8

Kensington House, Suffolk Street, Queensway, Birmingham B1
OFFICES: LONDON, BIRMINGHAM, MANCHESTER, PARIS, AMSTERDAM, BRUSSELS
INTERNATIONAL DATA PROCESSING CONSULTANTS

Success in Simulation

We have NEW multi-million pound contracts for U.K. and overseas.
We need NOW at Senior and Junior level:

Systems Engineers
Electronic Engineers
Software Engineers

Could YOU help us to simulate:
Complex Air/Sea Scenarios
Multiple Sensor inputs with full effects
Communications above and below water

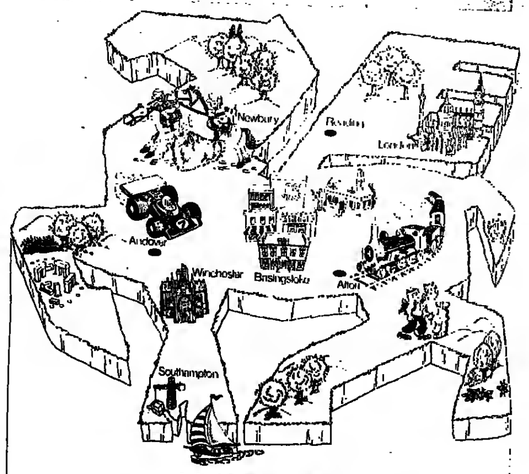
We may live in a world of make-believe, but our projects can be fun and the benefits are REAL.
FIND OUT MORE
Fill in the coupon below and we will tell you why you should try to join:

FERRANTI Computer Systems — WORLD LEADERS IN NAVAL TRAINERS

Open to male and female applicants

SEND TO:
Ferranti Computer Systems Ltd.,
Personnel Department,
Western Road,
Bracknell, Berkshire RG12 1RA.

B/24/CW MAIL OPPORTUNITIES
PACKAGE 'T' TO: .....



Join Lansing Bagnall, Europe's leading manufacturer of Lift Trucks:

SENIOR ANALYSTS Up to £8000

Including bonuses
4 years systems experience necessary.

ANALYSTS Up to £6700

Including bonuses
2 years systems experience necessary.

Added advantages:

* Duel 2960 under VME/B and DME
* Extensive on-line systems under development with commitment to IDMS database
* Training will be given in these new techniques
* Full relocation expenses paid and disturbance allowance
* Rural environment. Basingstoke is 45 minutes from London, an hour from the sea and New Forest
* Big company benefits

To find out more about these opportunities, telephone John Clestor, our Systems Development Manager on Basingstoke (0256) 3131 ext. 2078, between 9am and 5pm or Thatcham (0635) 63734 after 6.30pm. Alternatively, you can write to him at Lansing Bagnall Ltd., Kingsclere Road, Basingstoke, Hants.

Lansing Bagnall
We do more for you.

Sales Excutives- Bored with going round in circles?

Win with Data General.

Join a Grand Prix Team, who recognise that to take the checkered flag you must have a fine team of Specialists and a car with power and performance second to none.

DATA GENERAL can give you a product range that has been designed and engineered for todays needs in mind and they are currently investing a substantial proportion of their revenue in research and development – pitstops are not necessary.

They are without doubt market leaders in Europe and are currently capturing a high proportion of computer sales in commercial, industrial, scientific and technical areas. Constant announcements of further enhancements of their equipment enable them to penetrate into the market with impressive and extremely competitively priced systems.

DATA GENERAL is more than aware of the importance of good people and this can be seen in the company's substantial marketing success and the well motivated – well rewarded team of professionals currently enjoying a working environment that promotes original thought and encourages flair.

We are now looking for self motivated and confident successful mini-computer Sales Executives who are aged between 25 and 35 and who can bring to **DATA GENERAL** further enthusiasm and commitment.

In return you will be given a substantial income package with guarantee plus company car and an important position offering you tremendous scope for personal achievement and development.

These positions are located in London, North East England (based at their Manchester offices) as well as Bristol.

If you think you have got what it takes to join a winning team then contact Richard Champion without delay for an immediate confidential interview on 021 236 3781 (24 hour answering service) or Hagley 884166 (evenings and weekends).

All replies will be treated in the strictest confidence.

JOIN THE WINNING TEAM
Data General

SCR
Specialist Computer Recruitment Ltd

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

PROGRAMMING STAFF

Permanent positions in South Hertfordshire

Salaries range from £5,000–£7,500 p.a.

depending on experience (min.1 year).

For more information write to:-

Christopher Fielder & Associates
25 Poland Street, London, W1V 3DB

ASSISTANT TO D.P. MANAGER IN SOMERSET

Company: Merriott Mouldings Ltd
Equipment: ICL 2903-26

Responsibilities:
Day to day of computer operations maintenance of existing system
Active involvement in future applications.

Requirements:
RPG II experience
Preferred ICL operations experience.
Initiative and ability to take responsibility.

Salary:
Package by negotiation, including profit sharing.
Merriott is a small and rapidly expanding company who are committed to an ambitious systems development programme, to include the use of communications facilities. Therefore successful applicant must have management ambition and potential.

Applications, stating experience in writing to: C. T. Blackman, D.P. Manager, Merriott Mouldings Limited, Tell Mill, Merriott, Somerset.

UNIVERSITY OF DURHAM
LECTURER IN COMPUTING

Applications are invited for the post of Lecturer in Computing tenable from October 1, 1979. Applicants should have experience of Computer Science research, preferably in programming languages and/or networks. The main computing facilities available are the NUMAC IBM 370/168 (MTS and MVS), the DERHAM PDP 11/34 (UNIX) and a new microcomputer teaching laboratory.

Salary on the scale £4333–£5892 per annum plus superannuation

Applicants (3 copies) naming three referees should be sent by July 16, 1979, to the Registrar and Secretary, Science Laboratories, South Road, Durham DH1 3LE from whom further particulars may be obtained.

PRESENTING THE SALE OF THE CENTURY!
PROGRAMMERS ANALYSTS OPERATORS
WE HAVE SUPER BARGAINS
Call VIP CONSULTANTS
01-404 0188
(Rep. Agency)
Hurry! Hurry! Hurry! Hurry!

Data Processing Manager

North West, c. £9,500

This is a new position in a progressive electrical engineering company, a subsidiary of a major British group. Responsibilities include improvement of existing computer systems, development and implementation of new ones and day-to-day supervision of the Data Processing Department. Company plans include development of real-time systems. The Manager will play a leading role in selection and installation of the requisite computing equipment. Applicants, probably mid-30's, should have an industrial background and previous D P management experience. The ideal candidate will also have a progressive outlook and ideas.

C.G. Moores, Ref: 24188/CW

Male or female candidates should telephone in confidence for a Personal History Form to:
MANCHESTER: 061-236 8981, *Sun Life House, 3 Charlotte Street, M1 4HB.*

Hoggett Bowers
Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE and SHEFFIELD

Computer Operator
Wilmslow Cheshire
Circa. £3000 p.a.

British Industrial Sand Ltd require an experienced operator to join a small team within the Computer Department.

The installation is situated in pleasant modern offices in the centre of Wilmslow and consists of an ICL 1902T (80K) using GEORGE 2 operating system on a single shift. Extensive development is in progress which involves large online network using ICL 7502 terminals.

The position carries the usual benefits expected from a large company. Free transport will be arranged for Congleton residents.

Please apply, giving details of your career to date:—

Mr P.N. Stubbs,
Computer Operations Controller,
British Industrial Sand Ltd.,
St. Ann's House, Parsonage Green,
Wilmslow, Cheshire.

Contract Programmers-Analysts

If you are thinking of doing contract work why not start here by registering now for immediate and forthcoming requirements.

For further details contact:
Bridget Kotchie
RENDECK LTD. 100 New Bond St. London W1. Tel: 01-629 5438

Rendeck
Recruitment Consultants

Computer Shift Operator
for ICL System 10

for Pershke Price Service Organisation Limited, sole U.K. agents for many of the leading German print and print origination equipment manufacturers, including some of the latest computer controlled separation and photo-composition systems.

You will be working on your own on a shift system that does not include night work, operating our ICL System 10 which is used for a variety of applications.

Salary up to national average, excellent benefits including subsidised canteen and sports and social club.

For an application form just contact the Personnel Manager, Pershke Price Service Organisation Limited, Dover House, 141 Morden Road, Mitcham, Surrey CR4 4XB. Tel. 01-648 7000

PPS PERSHKE PRICE SERVICE ORGANISATION LIMITED

Here's a computer servicing job you'll feel at home with.

An interesting and challenging job that doesn't involve country-wide travel.

Marconi Avionics is one of the world's leading and most successful electronics companies and we make extensive use of computers in virtually every area of our operations. At our pleasantly situated establishment in Borehamwood Herts we have six G.E.C. 4080's handling a wide variety of vital work, so we need to keep them running at a high level of efficiency at all times. And that's where you come in.

Our immediate need is for men and women who have experience of computer maintenance, fault diagnosis and rectification on both mainframes and peripherals and including disc drives. Ideally you should also have some knowledge of data communications and if you have completed an appropriate course of training in computer maintenance, so much the better.

So join us here at Marconi Avionics and enjoy a good salary, attractive benefits and a stable and interesting working environment.

We can, of course, assist you with relocation expenses where appropriate.

Phone Chris Hall on 01-953 2030 Ext 3449 or write to him at Marconi Avionics Limited, FREEPOST, Elstree Way, Borehamwood, Herts WD6 1BR. Or call 01-207 3455 any time day or night and we'll send you more information. Please quote reference MA/20123.

MARCONI AVIONICS
A GEC-Marconi Electronics Company

Senior Computer Operators
Bristol
£4829–£5906 including shift allowance (under review)

Applications are invited for 4 Senior Computer Operator vacancies in the Computer Branch of the Resource Planning Department at the new Regional Headquarters, Bedminster Down, Bristol.

The installation consists of twin ICL 2960 DME computers with 7904 front end processors operating under GEORGE 3 supporting a comprehensive batch and communications work load.

Candidates should have several years operating experience in an ICL GEORGE 3 installation, with knowledge and experience of communications hardware being an additional advantage.

Successful applicants will be required to work an average of 38 hours per week on a 5 day 3 shift cycle which will be extended to a 7 day 5 shift cycle during 1979.

Terms and conditions are those expected of a large organisation and include generous holidays, sickness benefit and a contributory superannuation scheme.

Applications on form AF/1 obtainable by ringing Bristol 648236 (during office hours) or from the Personnel Manager, Bedminster Down, Bridgwater Road, Bristol BS13 8AN, to whom they should be returned quoting vacancy reference number 411/79/CW by not later than 31st July, 1979.

Central Electricity Generating Board
South Western Region

LONDON BOROUGH OF BROMLEY
COMPUTER APPLICATIONS
ARCHITECT'S DEPARTMENT

Salary up to £8,345 inc. (REF: F.31)

The successful candidate will be responsible to the Chief Administrative Officer for developing the use of the present computer terminal as well as develop the use of the computer techniques within the Department. The Council's computer is an ICL 1903T 128K installation and is under the control of the Borough Treasurer.

The successful candidate must have considerable experience with computer techniques and be able to write programmes dealing with technical subjects. Therefore, a qualification in the building industry would be desirable.

Commencing salary dependant upon age, qualifications and experience. In approved cases, assistance will be given towards reasonable removal and resettlement expenses. A 19-day four week cycle of hours is in operation.

Closing date 26th July 1979.

Application forms from the Assistant Chief Executive (Manpower), Town Hall, Bromley BR1 1SB. Tel: 01-464 3333, Ext. 3318.

FINANCIAL SYSTEMS ANALYST

Croydon c. £7,500 + many company benefits

The company, Britain's largest sugar producer, is introducing a DEC minicomputer in its central finance area. This machine is the first stage in establishing a distributed network which will form a company-wide financial database.

The successful applicant will monitor the implementation of a management information and accounts system. In addition he/she will be responsible for all future development in the financial area and the re-evaluation of existing software.

This is a management appointment and the associated ability in communication are considered of equal importance to technical ability. Candidates should be at least 24 years old with a minimum of three years' experience of programming and systems analysis, preferably gained in accounting applications.

The company offers excellent working conditions and benefits which include four/five weeks' holiday, free meals, non-contributory pension scheme, free life assurance, private medical treatment and preferential mortgage scheme.

Ref. FW 2B/2

Please contact

TYLIN

CHRIS TILLBROOK
A division of Tylin Management Systems Ltd. Leon House, High Street, Croydon CR9 3NH. Tel. 01-660 2323

A Member of the TATE & LYLE GROUP

Member of the Computing Services Association

Scicon

Consultancy in Defence
£5,500 to £11,250

Scicon, a leading international computer systems and services consultancy company, requires experienced professionals for an expanding Defence systems group. Successful candidates will be involved in design analysis, trials analysis, performance assessment and simulation of complex systems.

Applicants should have a good honours degree in a numerate subject and have at least two years' experience in one or more of the following areas:

- ★ HIGH LEVEL LANGUAGE PROGRAMMING FOR SCIENTIFIC APPLICATIONS
- ★ SYSTEMS ANALYSIS/DESIGN
- ★ MATHEMATICAL MODELLING TECHNIQUES
- ★ STATISTICS
- ★ SIGNAL PROCESSING
- ★ COMPUTER SCIENCE FOR SCIENTIFIC APPLICATIONS

Scicon offers outstanding career opportunities which span a field from programming to management with the emphasis being placed on the ability to run projects of varying size and application. Promotion reviews are merit based, and salaries are based on both past experience and future potential. There are a number of fringe benefits available, as befits an international company.

Contact Jack Cowdy, Director on 01-603 7335

IPP Information Processing People
58 Pembroke Road London W8. Telex 261296
Computer Services & Recruitment Consultants **01-603 7335**

We're successful because our staff are

Data Logic operates at the forefront of computing, applying the very latest hardware and techniques to practical commercial problems. We cover the range from mainframes to the smallest computers. We are leaders in the use of microprocessors for applications that not so long ago required far larger machines.

Many of the systems we supply go far beyond providing extra speed and cost savings. They will revolutionise the way the user organisations operate. Several projects involve dispersed networks of ten or more minicomputers. Our largest turnkey system incorporates twenty-three machines and close to three hundred display terminals across the country — a totally new system which will serve almost every function within a leading company. A new police contract involves the first use in the UK of a mini for a complex data retrieval application — with our own advanced methods for rapid, generalised record searches.

The exceptional scope and quality of work is important to our staff. We can match their individual experience to their projects. Equally, we can ensure that each project adds to their experience. As computing itself develops, so do they.

Over the past year Data Logic has grown dramatically in size, in scope of work and in reputation. Our expansion has meant unrivalled opportunities for career progression. We are not prepared to promote people before they are ready for it. But when they are ready — and we give all the assistance we can — the positions as senior programmer, senior analyst, project manager and consultant will be there waiting for them.

The reason is simple. We know that we are successful only if our staff are.

Senior Software Staff

(Ref PS/32/CW) For mainframe, minicomputer and mixed processor systems, usually supporting terminal networks. Increasingly Data Logic's turnkey projects involve minicomputers at multiple sites.

Applicants must have at least five years experience including some work in consultancy, system design or team management. Substantial knowledge is required of either high level language implementation on a leading mainframe or assembler language development on DEC, Data General or other leading minicomputers. We are especially interested in experience of:

- database systems
- distributed systems
- data communications
- telemetry
- operating systems design and implementation.

Salaries will be highly competitive and a company car is provided to staff at senior team leader level or above.

There are vacancies at our Greenford, Birmingham and Manchester offices.

Programmers

(Ref PS/33/CW) For both mainframe and minicomputer projects which include commercial applications, monitoring and control, and scientific analysis.

Applicants should have at least 18 months programming and/or analysis experience in high-level language or assembler on any leading mainframe or minicomputer.

This is an outstanding opportunity to gain experience in the development of complex high performance software. Our programmers work in small teams, taking considerable responsibility for distinct areas of the total system.

Salaries will be highly competitive. Vacancies exist at our Greenford, Birmingham and Manchester offices.

Our profit-sharing scheme ensures that staff benefit from the company success they create. Regular career appraisals provide a direct link between individual achievement and personal rewards.

Write or call, quoting the appropriate reference number:
Kathy Martin
Data Logic Limited
29 Marylebone Road
London NW1
01-486 7288

A Raytheon Company

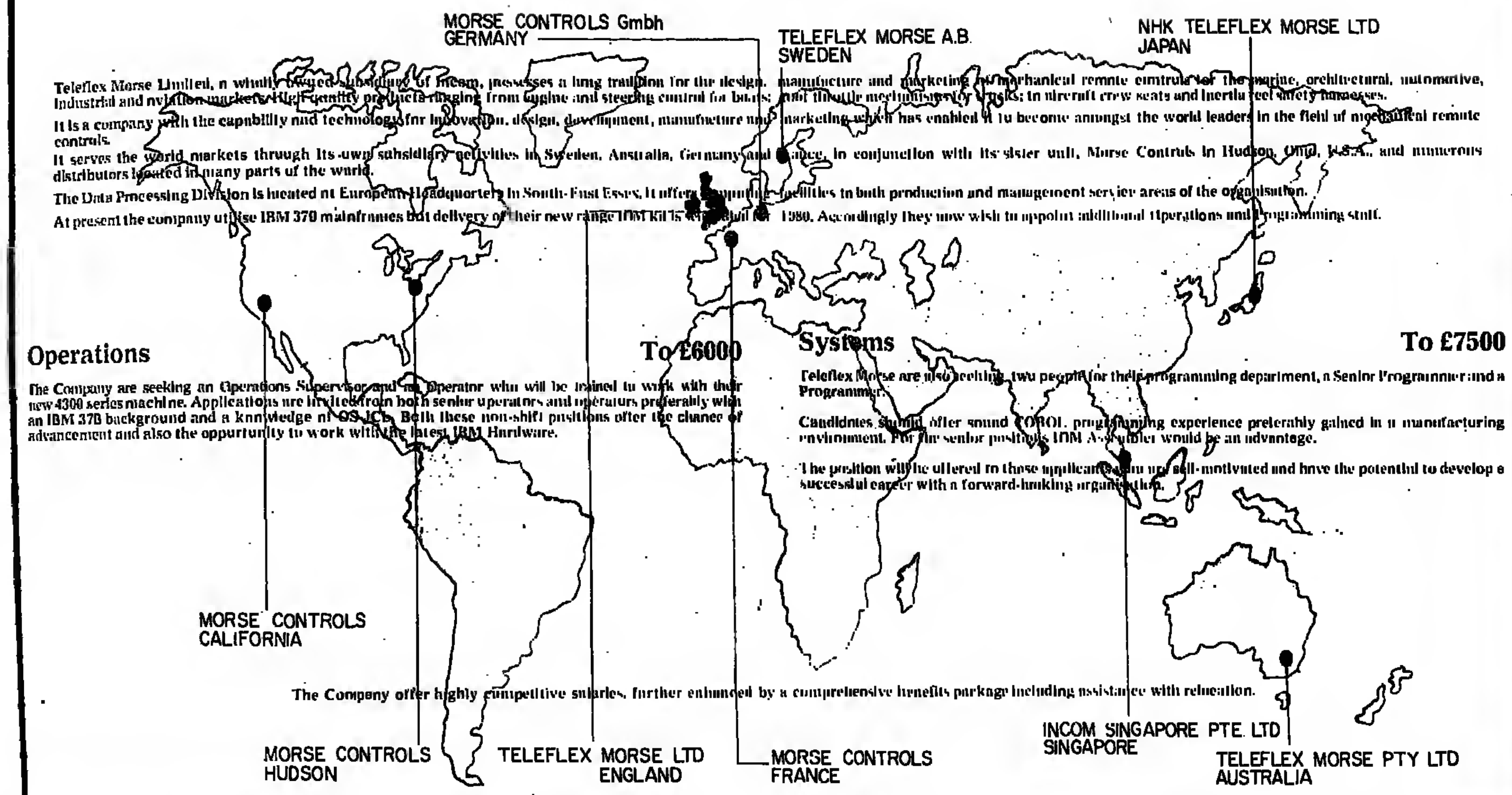
Data Logic

OPEN DAYS 17th-19th July CENTRAL LONDON

Words can only convey part of Data Logic's unique atmosphere. Meeting us will tell you far more. During July we are holding three open days at our offices at 20 Soho Square, London W1. Come and discuss the opportunities we have for you, between 12 noon and 7 p.m. on Tuesday 17th July and Wednesday 18th July, or between 12 noon and 8 p.m. Thursday 19th July. There will be ... and light refreshments and ... sessions will be informal.

MYRIAD

NEW IBM 4300 SERIES
ESSEX



Teleflex Morse Limited, a wholly owned subsidiary of Incom, possesses a long tradition for the design, manufacture and marketing of mechanical remote controls for the marine, architectural, automotive, industrial and aviation markets. High quality products ranging from engine and steering control for boats, and throttle mechanisms for trucks, to aircraft crew seats and inertia reel safety harnesses.

It is a company with the capability and technology for innovation, design, development, manufacture and marketing which has enabled it to become amongst the world leaders in the field of mechanical remote controls.

It serves the world markets through its own subsidiary activities in Sweden, Australia, Germany and France, in conjunction with its sister unit, Morse Controls in Hudson, Ohio, U.S.A., and numerous distributors located in many parts of the world.

The Data Processing Division is located at European Headquarters in South-East Essex. It offers computing facilities to both production and management service areas of the organisation.

At present the company utilise IBM 370 mainframes but delivery of their new range IBM 4331 is scheduled for 1980. Accordingly they now wish to appoint additional Operations and Programming staff.

Operations — To £6000

The Company are seeking an Operations Supervisor and an Operator who will be trained to work with their new 4300 series machine. Applications are invited from both senior operators and operators preferably with an IBM 370 background and a knowledge of OS JCL. Both these non-shift positions offer the chance of advancement and also the opportunity to work with the latest IBM Hardware.

Systems — To £7500

Teleflex Morse are also seeking two people for their programming department, a Senior Programmer and a Programmer.

Candidates should offer sound COBOL programming experience preferably gained in a manufacturing environment. For the senior position IBM Assembler would be an advantage.

The position will be offered to those applicants who are self-motivated and have the potential to develop a successful career with a forward-looking organisation.

The Company offer highly competitive salaries, further enhanced by a comprehensive benefits package including assistance with relocation.

MYRIAD APPOINTMENTS LIMITED Please telephone for a confidential discussion or write to: 36 Fleet Street London EC4Y 1AA Tel: 01-353 0981

SYSTEM ANALYST
WEYBRIOGE — £5500

Major subsidiary of large European group in process industry currently running ICL 2903 with the help of small friendly team seeks second in command.

Ideally you have gained experience at the smaller end of the computer range, and are looking to broaden your horizons. A challenge to help implement new local and remote systems awaits you. Some knowledge of operating and programming a definite asset.

Benefits include free life assurance, contr. pension, four weeks holidays. For further details ring now.

DEE EXECUTIVE LIMITED (AGY), 01-549 9251

IBM COBOL PROGRAMMERS
CENTRAL LONDON

PROGRAMMERS TO £6,500

SENIOR PROGRAMMERS TO £7,500

For Development Work In Project Teams

01-402 9355

LANCHESTER POLYTECHNIC
AT COVENTRY
FACULTY OF APPLIED SCIENCE
Department of Mathematics
and Department of Computer Science

EXPERIMENTAL OFFICER

(2 posts) £5232-£6666

THE JOB: The Officer will assist academic staff of the above Department in all aspects of research work and laboratory equipment development.

THE PERSON: Should possess an honours degree in an appropriate subject area and should have four to five years' research / industrial experience.

For application forms and job specifications please apply in writing enclosing a large stamped addressed envelope to the Personnel Officer, Lanchester Polytechnic, Priory Street, Coventry CV1 5FB, returnable within ten days of the appearance of the advertisement.

The Company is about to embark on a new phase of development and is due to take delivery of a large IBM System 34 during 1980, consequently we now wish to appoint a

Programmer/ Analyst

The person (male / female) appointed to this key position will report directly to the Data Processing Manager and ideally should have some experience of systems analysis and design, sound RPG II programming background together with a knowledge of both production and accounting orientated computer systems. An understanding of business procedures is essential and some knowledge of integrated on-line systems would be an advantage.

The work will cover all aspects of systems development from feasibility through to implementation and continued maintenance.

Remuneration will be competitive and in accordance with experience and ability. The Company offers very pleasant working conditions including 'flexi-time' working hours.

We are a member of GKN, Britain's largest International Engineering Group, manufacturing a wide range of arc welding equipment, accessories and consumables.

Applications, giving brief details of qualifications and career to date, to be made in writing (or by telephone Welwyn Garden 24581, Ext. 276) to:

B. R. CORNISH — Data Processing Manager
GKN LINCOLN ELECTRIC LTD.
Black Fan Road
Welwyn Garden City, Hertfordshire AL7 1QA

GKN - Britain's largest international engineering group.

MANCHESTER:
Computer professionals £4,500 to £9,500

Systems Designers Limited formed its Manchester Branch in Autumn 1978 and due to a full order book, requires further computer professionals.

Applications are currently in hand in the Communications, Viewdata, Scientific and Process Control fields.

Staff are required at all levels for these interesting projects which use the latest mini and micro computers. If you have one to eight years' real-time experience and would enjoy the challenge of helping our branch grow at an even faster rate, please contact:

SYSTEMS DESIGNERS LIMITED

Mike Bray
Systems Designers Limited
Ell House
Woodlands Road
Altrincham, Cheshire WA14 1HG
Telephone. 061-928 9305

USA

Computer professionals required

Systems Designers Limited specialises in the provision of consultancy and software services to users of mini and micro computers in process control, communications and defence. The Company has recently been awarded contracts in the Middle East, Belgium, Germany and the USA

To continue our expansion, further experienced real-time programming staff are required for assignments of two years in America

£20K to £30K per year
Two-year contracts with terminal bonus
Generous relocation assistance
Settling-in allowance
Free Medicare
Position within SDL (UK) on return

If you have between two and seven years' real time programming experience on mini or micro computers and are interested in broadening your experience, please write to, or phone:

Corinne Alsop
Systems Designers Limited
Systems House, 1 Pembroke Broadway
Camberley, Surrey GU15 3XH
Telephone: Camberley (0276) 62244

SYSTEMS DESIGNERS LIMITED

DOW CORNING EUROPE

SYSTEM PROGRAMMERS (2)

BRUSSELS **From £14,000**

WANTED

Two high calibre systems programmers to join small systems team.

WE OFFER

★ Excellent salary prospects
★ Career growth opportunities
★ International working environment
★ Excellent benefits programme
★ Relocation expenses paid

Our installation consists of an IBM 3031 4MB running under OS/VS1 and IMS. Our TP network covers our offices in Europe and is linked to our Corporate Centre in the U.S.A.

Applicants should have experience of OS/VS1 and/or IMS. MVS experience would be an advantage although not a requirement.

If you are seeking a challenging career in a growth oriented multinational company and you meet the above qualifications please telephone or send your résumé, in English, of prior experience, education background and salary requirement to:

Mr. Giff Brown
MIS Manager Europe
Dow Corning Europe
Chaussée de la Hulpe, 154
1170 BRUSSELS, Belgium
or Phone Brussels 673.80.60
(STD code 010.322), Ext. 2001

PL/1 APPLICATION PROGRAMMERS

COME AND JOIN US

From £12,000

WE OFFER YOU

- Excellent salary prospect
- Career growth opportunities
- International working environment
- Excellent benefits programme
- Relocation expenses

You will be a member of a dynamic Systems Development Team which is using advanced data base and online technology on an IBM 3031 OS/VS machine supporting the Company's operations throughout Europe.

Our offices are located in pleasant surroundings, in south Brussels with easy access.

If you think you will fit into our challenging environment, please contact.

Mr. Giff Brown
Mis Manager Europe
Dow Corning Europe
Chaussée de la Hulpe, 154
1170 BRUSSELS
Belgium
673.80.60 Ext. 2001
or Phone Brussels
(STD code 010.32.2)

HIGH TECHNOLOGY TODAY — MANAGEMENT TOMORROW

for GRADUATE PROCESS CONTROL DESIGN ENGINEERS
HARROGATE AND GLOUCESTER

ICI Fibres Division is among the leaders in the application of the most modern and sophisticated electronic technology to the control of synthetic fibre production. Major new initiatives in this field mean that we have vacancies for Design Engineers to work in the following sectors:

ELECTRICAL	(Harrogate)
INSTRUMENT	(Harrogate)
PROCESS COMPUTERS — HARDWARE AND SOFTWARE	(Harrogate and Gloucester)

Innovation is the key to our activity and we can promise interesting and varied work from the project definition stage through to plant commissioning.

Applications are invited from Engineers/Scientists, preferably graduates under 30, who can demonstrate an appropriate track record. Above all we are looking for people who can make things happen and who can go on to fill senior management vacancies over the next 5 — 10 years.

Assistance will be given on re-location. Both Harrogate and Gloucester are situated in pleasant rural areas and offer reasonably priced housing and excellent amenities. For the right sort of applicant, total earnings can range up to

£10,000 pa

Please apply with full career details to:

D A Garratt
Personnel Department
ICI Fibres, Hookstone Road
Harrogate, HG2 8QN, North Yorkshire

Applications are welcome from both men and women.

ICI

JBA

Senior Consultants

London W1. **c £10,000**

We have been retained by one of the largest Software Houses in Europe to assist with the appointment of three senior professionals into their consultancy group. The work includes taking responsibility for sophisticated projects, carrying out feasibility studies and implementing complex systems in a wide range of locations throughout the UK.

Candidates must have at least six years in the d.p. industry with four spent in the design and development of commercial applications as a project manager or DPM. Knowledge of database and real-time techniques would be an advantage.

Salaries are negotiable according to experience. Company benefits including bonus and relocation expenses. Overseas opportunities also exist.

For an informal discussion please contact Jim Baker.

JAMES BAKER ASSOCIATES,
International Personnel Consultants,
16 Maddox Street, London W1.
Tel: 01-491 4478.

£10k+Appointments £10k+

Technical Support Engineers

There's a rewarding life waiting for you in Europe

Due to the expansion of our European operations, we need a number of hardware and software TSE's to join our fast-growing Frankfurt-based team.

Hardware TSE qualifications:

Minimum 2/3 years experience in large and/or small systems. You will be supporting our European software training programmes. Fluency in one or more languages would be an advantage . . . however language training will be given where required.

Software TSE qualifications:

You must have experience in operating systems in large computers or with mini's. Ideal position for systems analysts or operating systems engineers. Languages not required.

This is one of the most attractive career opportunities we've ever offered to Support Engineers both in terms of career opportunity and lifestyle. Training will be in the States. We will pay all re-location expenses for you and your family. To give your family every opportunity to fit into the local community we will arrange and pay for German lessons for you and your wife. Obviously finding the right accommodation is vital as we look upon these as long-term appointments. Consequently we will pay your expenses to look for suitable accommodation once contracts are signed.

The salary is around 4,000DM per month with an extra bonus month's salary each year.

If you'd like a more rewarding life for both you and your family, get in touch. Contact Janet Field at the address below or telephone her on 01-572 7455.

Data General

Data General Limited, 3rd & 4th Floor, Hounslow House, 724/734 London Road, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.

Analyst Programmers/ Programmers

SAUDI ARABIA

to £15,000 pa + car + accommodation

Our client is in the van of the construction industry in Saudi Arabia and has recently brought on stream a Burroughs 1728 with 256k core, 260 megabytes of disc and ten VDU's. Six satellite systems are planned in the next eighteen months.

Analyst Programmers and Programmers up to age 35 with COBOL language experience are required for the development and implementation of new systems in Contract Management, Inventory and Accounts Control.

Salaries, which are tax free, and conditions are extremely good for men with a flexible approach to life and interested in pursuing a demanding but very rewarding career in the Kingdom.

Apply by written c.v., quoting ref. JED 1083, to ERP International Recruitment Limited, Clemence House, St. Werburgh Street, Chester CH1 2DY. Telephone (0244) 317886 (Ansafone after 6pm).

Offices in London, Chester, Jeddah, Amsterdam, Brussels, Milan, Paris.

ERP INTERNATIONAL

BELGIUM HOLLAND FRANCE

£9,500 to £13,000
(Even more for first class applicants)
IBM 370

- JCL Programmers MVS or OS/VS1.
- Assembler and/or Cobol Programmers OS.
- Operational Analysts with some programming experience.

Call Norma Baxter on 01-953 4066 for further details.

Howard Organisation International Ltd.,
Employment Business Section,
8, Bletsa Way, Borehamwood, Herts.

£10K +

APPOINTMENTS

If you require personnel who command salaries of £10k and over take the opportunity of advertising in this special REGULAR FEATURE.

For further details contact:
Mark Williams on
01-261 5028
or
Mark Pulver on:
01-261 5174

---

datascene

COMPUTER SERVICES CONSULTANT

WHERE ARE YOU NOW?

Selling Hardware or Software? Disillusioned with unrealistic targets, and petty commission deals?

Or are you in Systems and Programming? Fed-up with limited career development, politics and red tape?

Perhaps you already provide services? Well now come and sell them!

Datescene may be able to offer you a new deal and a new career marketing, selling, maintaining and developing our range of services to the computer industry.

Enjoy an attractive salary package, a company car and a real training programme.

If you are confident, dynamic, a good communicator and are of smart appearance

Call today and discuss a better tomorrow, with

BOB EDWARDS
AT

Datascene International Ltd.
Sceptre House
169-173 Regent Street,
London W1R 7FB
01-439 1856
24 hour answer phone

DRING PACKAGING GROUP

ASSISTANT D.P. MANAGER/ PROGRAMMER

Southern Holiday Resort

We are one of Portsmouth's largest companies and manufacture a complete range of packing products.

Due to the expansion of our D.P. Department we require an Assistant Manager/Programmer with a minimum of 2/3 years Cobol experience.

Applicants with experience of a Burroughs 1726 installation preferred, but consideration will be given to applications from suitably qualified persons who have the knowledge of other installations.

This appointment offers an interesting and challenging position and would suit a talented person who has the ambition to progress within a company which has a fast moving planned D.P. development programme

Salary will be negotiable and in addition we offer first class employment conditions. Pension and Sick Pay Scheme

Interested, please contact our Personnel Department, J. Dring Limited, The Airport, Portsmouth, Telephone Portsmouth 63272, for an application form.

PROGRAMMER

with systems potential

c. £8,000

We are looking for an experienced programmer interested in expanding his/her career into systems work.

The post will ideally suit someone with about two years' COBOL programming experience who is now looking for a wider job responsibility.

The job requires both the ability to work with minimum supervision and to communicate effectively with all levels of staff and management in an industrial environment.

The Company, which is part of a major UK Group and situated in North East London, close to the Essex border, is entering the next phase of computer development. The person appointed will report directly to the D.P. Manager and the post offers both a high level of job interest and very attractive terms of employment.

Please write giving details of experience to:

WALTER JUDD LIMITED (Ref. L215)
(Incorporated Practitioners in Advertising)
1a Bow Lane, London, EC4M 9EJ

UNIVERSITY OF ESSEX
SSRC Survey Archives

Research Officer

-- Management of Large Survey Data Bases

Applications are invited for the post of Research Officer (Grade IB, salary scale £1775-£5488). Appointment will be from 1 October 1979 for a maximum of two years. Grade and should have a good first degree in the social sciences or computer science and be familiar with the computer operating environment the post will be based.

Applications (three copies) including a curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/88/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SQ, from whom further particulars may be obtained, by July 31st, 1979.

NEWSFLASH!
PROGRAMMERS, ANALYSTS
COBOL — RPG II — PL/I — ASSEMBLER
IBM — ICL — MINI'S
URGENTLY NEEDED!
Phone NOW
VIP Consultants
21-454 0155
(Emp. Agy.)

VP

CAPITAL APPTS.

GRADUATES

Urgently required to training positions (industrial, scientific and Commercial) locations

SALARIES c. £3,000 ALL AREAS

£37,555 (Eng), £36,955 (Fin)

LONDON W.1.

"I'm young and ambitious, I've been in programming long enough to know that I want to broaden my horizons."

"I'm a customer service representative. I now want the chance to develop my career."

"I've been analysing systems for a couple of years now and I want to start using my skills in a more practical manner."

If this is you (or anything like you) read on

Infotech International, world leader in DP Education, has launched an exciting new development in its education and training programmes and are looking for two young and ambitious people in their mid-20s to become

EXECUTIVE CONSULTANTS

For the right people this will be a unique opportunity to get in on the ground floor of what is one of the most important developments in this market.

The job will be to service a carefully selected list of clients, understand their business, anticipate their training needs, advise them on what action should be taken and act as the crucial link between them and Infotech's facilities.

Located at Maidenhead (beautiful River Thames, excellent road and rail connection, peace and quiet) in modern offices, the job offers excellent salary and prospects.

Call John Spencer now on
Maidenhead (0628) 39101
or write giving full details of your career to date to:
John Spencer, Director of Education and Training
INFOTECH INTERNATIONAL LTD.
Nicholson House, Maidenhead
Berkshire SL6 1LD, England

HERTFORDSHIRE COUNTY COUNCIL
FINANCE DEPARTMENT

Senior Computer Operator

Salary range £3,861-£4,275 plus 14% shift allowance

An operator with at least 2 years' experience, some in a supervisory position, is required to fill this vacancy in our operations team working 2 shifts, 5 days a week.

The installation comprises a 1M byte Criterion 8580 providing virtual storage under VRX operating system and interactive program development. Current developments include a major on-line stock control system and the installation of mini-computers as part of a planned distributed processing network.

Generous holidays, a contributory pension scheme with a wide range of benefits, ideal working conditions, new staff restaurant, in an attractive rural setting overlooking the County town of Hertford, a range of sporting activities and within easy reach of London's many amenities.

Removal, disturbance and lodging allowances are payable in approved circumstances and assistance with housing may be given.

Applications (no forms) giving details of experience, age, qualifications etc. to the County Treasurer, County Hall, Hertford, quoting reference CP.9, by 27 July, 1979.

Goldsmith brings temporary relief from permanent boredom.

Higher earnings, freedom, variety, particularly variety. When you work on contract with John Goldsmith you know you're working with one of the biggest and we're bigger because we've got better contracts with more of the kind of Companies you'd like to work for.

Our Contract Staff Division is headed by David Garnsey and he and his team of consultants make a point of getting to know the people that work for us and keeping in regular contact.

Amongst our current requirements are the following contracts.

U.K.

Programming Team Leader. An in-depth knowledge of IBM PL1 & some CICS, required to lead a team of three programmers for a project duration of four months.

Systems Designer. A solid background in VMEB required by our client in Central London. This contract will initially be for three months.

Programming Team Leader. IBM Assembler (DOS) experience, required to lead a programming team within a large commercial environment.

Programmers. Interesting project for two programmers with DEC Assembler experience on an RT11 operating system, to work on a Stock Control Application.

Systems Analyst. With good Production Control experience, preferably IBM System 3, knowledge of MAAPICS would be advantageous.

Analyst Programmer. DEC BASIC + 11 experience required by City based Client for 6 month contract.

U.K. cont.

Analyst Programmer. With an in-depth knowledge of Honeywell Level 6 Data-Base.

Programmers. IBM Cobol (OS/VS1) programmers with Environ 1 experience required for a 6 month contract.

370 Assembler Programmer. Applications or systems programming experience + banking background, 5 month contract.

HOLLAND

Systems Analyst. 1 Year project for Dutch speaking Analyst with PDP 11 experience.

GERMANY

Systems Programmers. German speaking a knowledge of D Bomp would be useful.

BELGIUM

Analyst Programmers. French speaking a knowledge of CICS would be useful.

Working for John Goldsmith you get all the benefits and security of a good permanent job plus permanent health insurance, advice on taxation and company formation, holiday pay, subsidised medical insurance and – of course – prompt payment.

Maybe you are on contract, or between contracts, now. Or perhaps you've always wanted to try contract work, but have somehow never got round to it. Let us tell you in detail of the advantages of working on contract.

Now is the time to act. Call David Garnsey or Ray Thomson on 01-828 5356.

John Goldsmith Computer Professionals on Contract

Computing Services Association

John Goldsmith (Computer Recruitment) Ltd.,
Contracts Division, Asphalte House, Palace Street, London S.W.1.
Telephone: 01-828 5356 – 24 hour answering service.
Telex: 916779.

Recruitment Consultants
A Company of the Provident Financial Group.

International Management & Personnel Consultants to High Technology

Europe's leading software house are expanding into exciting new areas. They are currently forming a team of high calibre technicians to be at the forefront of this development and require:

CONSULTANT PROGRAMMERS & SENIOR SYSTEMS PROGRAMMERS

At the consultant level you would need at least 3 years' experience in design and development of small systems preferably in the Finance or Communications fields plus the capability to control a small technical team.

At the senior programmer level you would need to have had some small systems/mini experience.

Both roles offer a unique opportunity to join the most comprehensive force of mini/micro specialist within one organisation in the U.K., and promotion prospects are excellent.

Salaries range from £6k to £8.5k with associated big company benefits.

Please telephone our London office to arrange an immediate interview quoting Ref. NOR 03.

IMPC LTD.
72-75 Marylebone High Street
London W1M 4AJ.
Telephone 01-486 5644

I.M.P.C. (NORTHERN) LIMITED.
Austin House, Charlotte Street,
Manchester.
Telephone 061 236 7026/7/8.

I.M.P.C. (IRELAND) LIMITED
20 Upper Fitzwilliam Street, Oublin 2
Telephone 0001 7663 87
0001 7665 43

INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
72-75 MARYLEBONE HIGH STREET LONDON W1M 4AJ.

COMPUTER ENGINEERS
U.K. all systems go O.S.

FIELD/SITE/SUPPORT/MANAGEMENT
ALL SYSTEMS GO
£5,000-£17,000

- STAND BY
- SHIFT
- OVERTIME (According to post)
- CAR OR ALLOWANCE

C. B. Stack Associates
RECRUITMENT CONSULTANTS. HODDESDON (0924) 42728

SYSTEMS PROGRAMMER

A vacancy exists in our Head Office in Edinburgh for a Systems Programmer to assist in the conversion from OS/VS1 to MVS: this is necessitated by the rapid expansion of our TP network which at present has over 130 terminals spread over 10 locations. Experience of MVS and/or IMS would be desirable, although not essential; the selected applicant could expect at an early date to take over particular responsibility for some aspect of our OB/OC software while working within a small team of software specialists.

STANDARD LIFE is the largest Mutual Life Assurance Company in the EEC with assets in excess of £2000 million.

COMMENCING SALARY ● £4000 to £7000, ACCORDING TO EXPERIENCE, WITH FURTHER SCOPE ON INCREMENTAL SCALES

EMPLOYEE BENEFITS
- VERY GENEROUS HOUSE PURCHASE FACILITIES
- NON-CONTRIBUTORY PENSION SCHEME
- SUBSIDISED DINING FACILITIES
- 4 WEEKS' HOLIDAYS IN FIRST FULL YEAR
- FLEXTIME

Please write or phone for application form or further particulars to Mr. J. M. Gibson, Recruitment Officer.

Standard Life
3 George Street, Edinburgh EH2 2XZ
Telephone 031-225 7971

CALCOMP OPERATORS

An experienced Calcomp (or similar) operator is required to operate our Calcomp 748 flat-bed and 1051 drum plotters.

An excellent salary will be offered. Modern offices and friendly atmosphere. Opportunities for progression into data processing.

Forward résumés to:

Data Processing Manager
Geosurvey International Limited
Geosurvey House, Orchard Lane
East Molesey, Surrey KT8 0BY

UNIVERSITY OF LONDON GOLDSMITHS' COLLEGE
New Cross, London SE14 6NW
School of Science and Mathematics

Applications are invited for the post of

TECHNICIAN GRADE 4

in the Mathematics Department to maintain and supervise use of computer equipment and develop software for micro-computer system. Knowledge at basic and assembly language programming essential.
Required for 1st September, 1979, or as soon as possible thereafter.
Salary on scale £3,747 x 5 increments to £4,233 per annum inclusive of London Allowance.
Write for further particulars to the Personnel Officer to whom applications should be submitted by 27th July, 1979.

Lothian Health Board

SENIOR SCIENTIFIC OFFICER

Applications are invited for the post of Senior Scientific Officer based in the Respiratory Laboratory, City Hospital, with some duties at the Pulmonary Function Laboratory, Royal Infirmary of Edinburgh and the Pulmonary Function Laboratory, Western General Hospital. The post would be of interest to suitably qualified applicants with special experience in on-line real time computing applications in medicine or respiratory physiology. Whitley Council conditions of service apply. The Laboratory may be visited by appointment with Dr. G. J. R. McHardy, telephone 031-447 1001 Ext. 394

Further particulars on request. Applications, which should be typewritten, giving particulars of age, qualifications and previous experience, together with the names, addresses and telephone numbers of three referees should be lodged with the Secretary, 11 Drumsheugh Gardens, Edinburgh EH3 7QG, by 27th July, 1979.

OPERATIONS SUPPORT ASSISTANTS

CROYDON

Salary within range £5163 to £6042 plus current self-financing productivity payment.

Do you have 2-4 years' operating experience on IBM mainframes but would like a change from shift work? Then why not consider joining Segas as an Operations Support Assistant within the busy computer installation at Croydon comprising 3032 and 3031 CPUs and a large scale TP network.

Essential qualifications are a minimum of two years' operating experience using OS/VS1 and/or VM/370, a thorough knowledge of OS JCL and utilities and the ability to communicate with both technical and non-technical personnel.

Duties will include problem troubleshooting, JCL development, documentation of operating procedures and liaison with Systems Development and Technical Support staff.

For further information phone Paul Calver on 01-686 9487 (daytime) or 01-654 3956 (evenings), or write giving full details to: **Personnel Manager, Segas, Segas House, Katherine Street, Croydon CR9 1JU.**

People come first with SOUTH EASTERN GAS

COMPUTER SUPERVISOR SYSTEMS ANALYST

We are Towler Hydraulics one of the world leaders in the manufacture of hydraulic equipment and a subsidiary of the Thorn Group of Companies.

Our continuing search for improvement and efficiency in both home and overseas markets has necessitated the setting up of a computer department based on an IBM 3/15. Your task will be to head up the department and direct the staff of Analysts, Programmers and Operators. Major objectives include the introduction and improvement of systems, supervising programming for new applications, liaising with senior management, IBM and Thorn Group computer management and making recommendations on all hardware and software for future developments.

The job has wide ranging responsibilities and calls for you to be not only a highly experienced Analyst but also a capable manager.

The rewards offered include an attractive negotiable salary and a comprehensive big company benefits package which includes full relocation expenses as necessary.

To find out more write with full background details to Peter Sutcliffe, Personnel Manager, Towler Hydraulics Ltd., Oaklands Road, Rodley, Leeds.

TOWLER

YES WE ARE EXPANDING AND WE NEED YOUR HELP!

Guardian Computer Services is a software house employing over 30 computer specialists developing tailor-made, commercial on-line systems in a project environment on the following hardware

IBM: System/32, System/34, System/38, Series 1 and 5110
SPERRY UNIVAC BC/7.
COMPUTER TECHNOLOGY (CTL) 8000 RANGE

Currently we are offering positions to.

SYSTEMS ANALYSTS

with at least two years' analysis experience on any disc-based mainframe or minicomputer, plus concurrent or previous programming experience

We can offer you the chance to widen your analysis capabilities, and obtain Project Leadership and Management experience in the last-time user environment

PLUS THE FOLLOWING

STARTING SALARY TO C £6,500, REVIEWED AFTER SIX MONTHS

PROFIT SHARE
TWO SALARY REVIEWS PER ANNUM
EXPENSES SCHEME
SUPERB OFFICE ACCOMMODATION
FLEXI-HOURS
IN-HOUSE HARDWARE
PENSION SCHEME
FREE LIFE ASSURANCE

If you wish to develop your career and obtain genuine job satisfaction with one of the North's most successful software houses, in either Manchester or West Yorkshire, please write or phone KEN McENTYRE.

St. James's House, Pendleton Way, Salford, Manchester M6 5JA.
Telephone 061-737 7352.

GUARDIAN COMPUTER SERVICES LTD

WE'RE EXPANDING!!

JBA

Prestel/Viewdata Specialists

Germany **from £20,000**

Immediate vacancies exist for consultants who have considerable experience of information transmission systems, such as Prestel, Viewdata, etc. Data communications expertise and database knowledge is vital to the positions, particularly where concerned with large mainframes and front-end processors. A user contact background is desirable.

Our client is one of the largest consultancy organisations in the world with over 3,000 employees. On this solid foundation, the company offer real up-market remuneration packages and excellent relocation assistance. Further, the prospects of continuation of projects at very senior levels in a worldwide market place is virtually second to none.

Contact: Mike Cronmer

Data Base Consultants

London based **neg. to £12,000**

Applications are invited from Senior Data Base Specialists with a wide computing and business background to join a leading consultancy. Candidates should have experience of special analysis and design methods appropriate to the data base approach, have worked with at least one of the proprietary systems and be able to compare the different types of solutions available. Appointees will be required to work on a variety of client projects, ranging from advising on feasibility through to the detailed design and implementation of specific applications. The ability to work in a sophisticated environment, coupled with the drive, personality and technical expertise to communicate on the same level as senior managers is of paramount importance.

Contact: Margaret Stevans

Systems Programmers

Munich **DM 65,000 – 90,000 + benefits**

Permanent positions are available with one of Germany's leading hardware manufacturers, for experienced IBM Systems Programmers who possess a minimum of 3 years experience.
DOS/VS, CICS, POWER/VS (or any other type of spooler) expertise is of most interest, although OS or MVS could also be of considerable value.
All successful candidates will receive full relocation expenses, including agents fees, an initial family separation allowance and a minimum of 6 weeks holiday per year (plus all statutory holidays). German lessons will be provided.

Contact: Andy Wright

Software Specialists

Home Counties **up to £9,000 + bonus**

A major software house, with an impressive growth record, is continuing to expand and currently has vacancies for Programmers and Designers to work on the development of middleware associated with established operating systems.
Candidates should have at least 3 years experience working on software such as OS, DOS, VME-B/K, communications or networks. A background of implementing large mainframe systems, perhaps with a manufacturer would be an advantage.
Excellent salaries, relocation assistance and profit sharing scheme.

Contact: Jim Baker

Technical Analyst

Bracknell **neg. £7,000 - £8,000**

This is an outstanding opportunity to join a successful British Air Freight Forwarding Company, to help consolidate and expand the operation of its still relatively small d.p. function, both here and overseas. The company runs a worldwide network of minis, so although specific hardware experience is not required, candidates must have a thorough understanding of the concepts and possibilities of network processing. A sound knowledge of accounting/financial applications is, however, essential and must be combined with the ability to work at a detailed technical level.
Company benefits include an excellent pension scheme plus medical and life assurance - generous relocation expenses can also be made available. Two salary reviews per year can be expected.

Contact: Andy Wright

Programmers & Analysts

South of England **up to £6,900 + mortgage subsidy + benefits**

One of the most prestigious insurance services companies in the UK with an impressive 40% growth factor last year, are recruiting additional staff for development work. Many systems are under way including installation of a DMS 2 database and a large real-time terminal network. Completion of these projects opens the way for a considerable number of additional systems thus ensuring creative work for the future.
Programmers must have at least 18 months COBOL experience in a batch or real-time environment. Analysts should have real-time commercial or accounting applications experience. First class location, outstanding employment package and a realistic career growth. Call for more details.

Contact: Mike Cronmer

For further information on any of the above vacancies, please contact the appropriate consultant.
If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

JAMES BAKER ASSOCIATES, International Personnel Consultants,
16 Maddox Street, London W.1. Tel: 01-491 4478

PROJECT LEADER

Surrey **to £7500 + Car**

A unique opportunity with a long established bureau/software house has arisen due to expansion. The company seek a programmer with at least five years in depth experience of System 10 and its software to assume the position of Project Leader.
The ideal applicant will be expected to contribute their experience to projects being designed and developed on the System 10. You will also be expected to write programs if necessary, and advise others about programming.
The company offer an excellent salary with the added advantage of a company car.

Reference HK28/1

BASIC+/ BASIC+2 PROGRAMMERS

Central London **to c£8000**

A small but rapidly expanding Software House are currently seeking programmers with a minimum of 18 months' BASIC + or 12 months' BASIC + 2.
The company have PDP 11/34 in House and all major developments utilise the hardware. A wide range of applications are currently being designed, mainly in the commercial area.
They offer a very good career path moving if so desired into Analysis or Systems programming at an early stage.
The company offer an excellent salary plus all the fringe benefits you would expect from a dynamic and growing company.

Reference HK28/3

COMMERCIAL ANALYST

Central London **to c£8500**

One of the leading Systems Houses in London currently require a Commercial Analyst with the minimum of 2 years Analytical experience.
Most of the work undertaken by this company is on Mini's, so some knowledge of Mini's is desirable but not essential.
The ideal applicant would have already designed one major system from feasibility to implementation in a commercial area.
The company offer an excellent salary and the career path is naturally self generated.

01-439 7871 Reference HK28/5

BURROUGHS COBOL PROGRAMMERS

City **c£6,500 + 3% Mortgage**

A merchant bank operating a large Burroughs installation including a mainframe and several minis is seeking several cobol programmers with good experience to develop into analysis work.

You will be of interest if you have eighteen months or more COBOL experience and are self motivated without the need for close supervision.

The company offers an excellent salary together with very good fringe benefits including a superb subs staff restaurant, L.V.s, Christmas bonus, etc.

Reference BP28/2

JUNIOR SYSTEMS ANALYST

City **c£6,500 + Mortgage**

A major financial organisation operating an ICL 1900 installation which will be updated to an ICL 2960 by the end of the year, is seeking a junior Systems Analyst who is looking to expand on their current experience.

The minimum requirement is 18 months systems experience gained on any hardware. A programming background would be useful although not essential.

The company offers a very good starting salary together with extremely good fringe benefits including a 4% MORTGAGE, BONUS, FREE LUNCH, season ticket loans, non-contributory pension etc.

Reference BP28/4

PL1 OR ASSEMBLER PROGRAMMERS

N. London **to c£7000**

A large manufacturing COMPANY OPERATING AN IBM 370/138 requires a number of programmers to expand their Data Processing department, which is undergoing a major development scheme.

The minimum requirement is twelve months experience, although the vacancies cover a range of positions and expertise.

The company offers a very good starting salary together with the usual fringe benefits one would expect of an organisation of this size.

01-439 7871 Reference BP28/6

A chance to combine your problem-solving skills and technical expertise

with CTL, one of Britain's largest independent business computer manufacturers, responsible for the successful 8000 Series Systems. We are growing fast and have a number of opportunities on the support side of our Customer Services Division:

PRODUCT SPECIALIST – HARDWARE up to £7K+car allowance*

to become our Technical Specialist on current products, provide cost effective servicing policies and liaise closely with the Marketing and Design divisions on the development of new products.

Candidates, HNC or degree level, should ideally have up to 5 years' hardware products experience, including peripherals and support in a service/design environment. Knowledge of programming, microprocessing and appreciation of systems software is essential.

SUPPORT ENGINEER – SOFTWARE up to £6K+car allowance*

to act in a Project Manager role for systems implementation, and then to monitor and advise on the use of the operating systems and applications software. There will be considerable technical contact both with customers and our own engineers.

Candidates, HND or degree level, will have a minimum of 2 years' experience in a computer or associated industry in the implementation and application of software systems.

JUNIOR SOFTWARE SUPPORT ENGINEER £4.5K – £5.5K+car allowance*

to be responsible for activities relating to the provision of systems support to the customer base and our field engineering staff, including involvement with product development, performance and testing exercises and specific monitoring of customer situations on site.

This career opportunity would ideally suit an HND student or someone with at least 1 year's experience in support/design software environment or computer operations.

All posts, based at Hemel Hampstead, are open to men and women, and offer a real opportunity to join a fast-growing British computer company developing mini-computers systems in software and hardware.

Salaries are negotiable according to experience and will also include a car allowance of £950 p.a. Excellent company benefits and career prospects.

Please write, or telephone, for further details/application form to Jim Paris, Personnel Officer, Computer Technology Ltd., Eaton Road, Hemel Hempstead, Herts. HP2 7EQ. Tel: (0442) 3272.

CTL
The British Computer Systems and Software Company

CURRENT REQUIREMENTS
ALL IMMINENT STARTS AND GOOD RATES

ICL		**IBM**	
1900 G2	London	OS VS1 VM	Home Counties
System 4	London	DOS	London
System 10	Berks	OS MVS	London
		System 3	London
HONEYWELL		**MINI**	
H66 GCOS	Home Counties	PDP 11	C. London
HOS2000	Home Counties	Data General NOVA	C. London

OTHER REQUIREMENTS If you have 18 months' minimum experience on any hardware CALL US NOW for more details of these and dozens of other assignments

VLI House, 68-69 St. Martin's Lane
London WC2 4JS

VLI group

CnOperators

Full-time

PROGRAMMER

for International Research into Dialysis and Kidney Transplantation.

The European Dialysis and Transplant Association requires a programmer with initiative and experience in FORTRAN and ALGOL to work at U.K. Transplant, Southmead Hospital, Bristol. An in-house DEC PDP11/34 and South Western Universities computer network is used. Salary in the range of £4,421 to £5,326 depending on age and experience. Superannuation as for an NHS appointment.

Applications to Dr. A. J. Wing, EDTA, St. Thomas' Hospital, London, S.E.1. (Telephone: 01-633 0636) from whom a full job description is available.

CLASSIFIED COPY

All classified copy should reach our offices no later than 5.30 p.m. on the Monday preceding Thursday's publication. If complete artwork is supplied 12 noon on a Tuesday.

Ring David Abbey for further details on 01-261 8016.

OCC

Specialists since 1971 in UK and International computer appointments. We have many other jobs on our files and offer a career counselling service to computer professionals.

[illegible]

HARDWARE DEVELOPMENT MANAGER

to £10,000 - £13,000 p.a.

Our clients are about to build a hardware team to work on the design and development of a new and important computer sub-system. The Project Manager will have a key position, being initially responsible for setting up a team of hardware engineers and eventually taking responsibility for the planning and progress control of the project within the shortest possible timescale. In addition to the management and technical supervision of the hardware team the manager will work in close association with the software teams and will need to communicate with top executives.

We are looking for an experienced Project Manager who has had team responsibility as well as involvement in a major hardware project from design to implementation. This should preferably be in computer design with an essential engineering background of the highest standard in a related field.

This is a first-class opportunity to lead a challenging project within a company offering first-class advancement in an expanding organisation. Ref. 515/CW/Renee Nute.

Please ring Renée Nute on 01-242 9356 or write to the address quoted. If it would be more convenient to telephone in the evening or during the weekend please ring 01-874 6372.

OCC Computer Personnel Limited, 16 Bedford Row, London WC1R 4EB

Member of Computing Services Association

Cleveland Area Health Authority

Middlesbrough General Hospital

Electronic and Bio-Medical Equipment Technician

A SENIOR ELECTRONIC TECHNICIAN is required to work with and be part of an existing team of technicians involved in the maintenance of a wide range of electronic and bio-medical equipment in the District.

The successful candidate, who will be responsible to the Chief Electronics Technician, will need to have been engaged on the more advanced work of the electronics workshop with experience of electronics in the computer field being a decided advantage.

Applicants must possess a minimum qualification of O.N.C., H.N.C. or H.N.D., or equivalent in Electrical/Electronic Engineering.

This appointment furnishes the ideal opportunity for a person with high skill and ability in electronics maintenance to expand their knowledge into the interesting field of Bio-medical equipment which includes brain and whole body scanning equipment.

Whitley Council conditions for B.T.B. Staff apply. Hours of duty normally 38 per week. Facilities for further education and training available.

Salary Scale £3,744 to £4,788 p.a. (Medical Physics Technician III)

Application form from District Administrator, District Offices, Poole Hospital, Nunthorpe, Middlesbrough, to be returned by 10th August, 1979.

South Tees Health District

Forward Trust Limited, a leading finance house and member of the Midland Bank Group, wish to supplement their management services function by the appointment of experienced computer personnel.

Business Analysts

£6,500 – £8,500 p.a.

Candidates will require several years commercial systems experience. They will lead and control teams investigating business problems, specifying solutions in non-technical terms.

Analytical and evaluative skills, together with a capacity for creative thinking, are essential.

Senior Systems Analysts

£5,500 – £7,300 p.a.

Candidates will have a minimum of 3 years' systems analysis and design experience with proven involvement in all aspects of analyst work. A programming background will be preferred and potential for career progression to Business Analyst is essential.

Forward Trust are currently reviewing the total company approach to computing, leading to a planned installation of a network of terminals by the end of 1980. This network will be supported from the head office at Birmingham and in time will lead to re-design of the existing batch systems on to a company database. Experience in On-Line networks, telecommunications and database techniques will, therefore, be an advantage in applying for the above positions.

Commencing salaries for the above positions are negotiable, according to experience. Established staff are eligible to apply for staff loans at preferential rates of interest and there is a non-contributory pension scheme plus the security of being associated with a major banking group.

Candidates, male/female, should telephone or write for an application form to:-

Anne Finney,

Forward Trust Limited

12 Calthorpe Road, Edgbaston, Birmingham B15 1QZ. Tel: 021-454 6141 ext. 247.

A subsidiary of Midland Bank Limited.

INFLUENCE THE DEVELOPMENT OF COMPUTING IN THE NORTH-WEST THAMES REGIONAL HEALTH AUTHORITY

SYSTEMS DEVELOPMENT OFFICER

SALARY SCALE £7,309-£8,777 p.a. (Pay award pending) (including London Weighting)

A vacancy exists for a Systems Development Officer, accountable to the Regional Computing Services Officer for the development of systems for the Regional Health Authority and Area Health Authorities within the Region, which covers Bedfordshire, Hertfordshire and Districts in North and West London. We are currently reviewing our computer policy and the person appointed will have an influence on the future strategy for computing development. Sound managerial experience is essential as is the ability to liaise with staff in all disciplines and at all levels.

A large ICL 1904S is installed in a new building in North London (near Friern Barnet Town Hall).

Application forms and further particulars from the Regional Personnel Officer, North West Thames Regional Health Authority, 40 Eastbourne Terrace, London W2 3QR (Telephone No. 01-262 8011, Ext. 261), returnable by 27th July, 1979, quoting reference number 510/CW/12/7. Applicants from outside the service commence at the minimum of the scale.

RGIT

ROBERT GORDON'S INSTITUTE OF TECHNOLOGY, ABERDEEN

MANAGER OF COMPUTER SERVICES

To control and develop the Institute's Computer Services including enhanced DEC 20 system.

Salary £10,317 per annum.

ASSISTANT MANAGER

Salary £7233 per annum

Assistance with removal expenses.

Details from —
Chief Administrative Officer
Robert Gordon's Institute of Technology
Schoolhill
ABERDEEN AB9 1FR

UNIVERSITY OF LIVERPOOL

Department of Physics

EXPERIMENTAL OR SENIOR EXPERIMENTAL OFFICERS

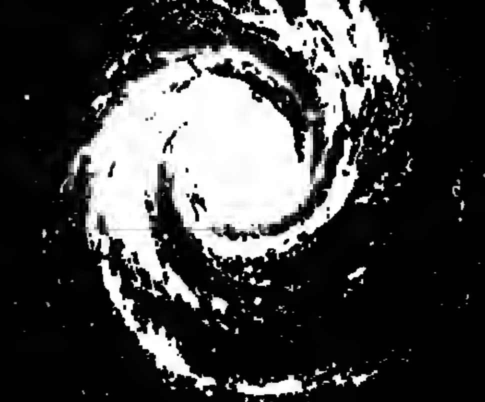
To collaborate in the design and commissioning of a Recoil Separator which will be used to analyse particle beams according to their velocity and mass. The Recoil Separator will be at the S.R.C. Laboratory at Daresbury in Cheshire.

(a) E.O./S.E.O. (Hardware). To design and commission devices for signal acquisition and signal conditioning to interface to a control computer.

(b) E.O./S.E.O. (Software). To write programmes for control and running of the Recoil Separator in real time.

The successful applicants, who will work primarily at Daresbury, will have a graduate (or equivalent) qualification and at least two years' relevant experience. The posts are available for a period of two years. Salary, according to age and experience, on the scale for Experimental Officers (up to £6108 p.a.) or Senior Experimental Officers (up to £7145 p.a.).

Application forms may be obtained from The Registrar, The University, P.O. Box 147, Liverpool L69 3BX. Quote Ref: RV/685 (a) or (b).



WANG

Join the superstars

. . . It's pure innovation that has put Wang into the superstar ratings, and at the forefront of computer sales in the medium, mini and word processing markets. Although in the superstar ratings, Wang have their feet firmly on the ground, combining sound business acumen with a simple yet sophisticated product range designed with today's needs in mind and based on 'state of the arc' equipment. They have gained their success not only by having very competitive products; keenly priced and well supported, but by gathering a well motivated, well rewarded team of professionals and encouraging original thought and creativity. Over the past year Wang has grown considerably in size, due primarily to their marketing success which necessitates the need to recruit experienced professionals . . . PUT YOURSELF AMONGST THE SUPERSTARS.

SALES EXECUTIVES: LONDON/HOME COUNTIES

NATIONAL ACCOUNT EXECUTIVE On quota c£20K + car
OEM SALES EXECUTIVE On quota c£18K + car
SALES EXECUTIVES On quota c£17K + car

Reorganisation in the marketing and sales force has identified a need to recruit key personnel, where experience, proven success and commitment will be well rewarded by exceptionally high earnings. These positions will require knowledge and experience of selling mini computer and/or word processing systems, and where applicants can demonstrate the ability to sell with a proven track record.

The National Account and OEM Sales Executive positions will require applicants with the appropriate skills in the respective areas. In both instances applicants should have previously negotiated with Chief Executives and senior management and ideally be used to UK responsibility in the assigned areas.

Contact: Cathy Tracey on: 021-236 3781 (24 hour answering service).

TELECOMMUNICATIONS SPECIALIST RICHMOND BASED — c£10,000 + car

A key and vital position within the UK support group is that of Telecommunications Specialist, it will require you to have detailed understanding of IBM systems software and telecommunications – which could include 3270 protocol, TP monitors, SDLC and TSO. Your function will be providing advice on the communications associated with the 2200, VS and word processing range of products. You should have an ASSEMBLER level language capability coupled with extensive communications and software experience.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

APPLICATIONS ANALYST RICHMOND BASED — c£8,000 + car

As a member of the UK systems support group your primary responsibility will be that of evaluating application packages and liaising between third party software vendors and the Wang customer base. Basic job functions will include technical appraisal, support, software training and the distribution of information to the marketing team.

This is a key national role within Wang and will require you to have extensive business experience and an in-depth knowledge of application software, ideally gained in an IBM environment. The successful applicant would have leadership skills and be fluent in COBOL.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

FIELD SERVICE ENGINEERS c£5,500 + car + overtime BASED NW1

We have been asked to identify experienced Field Service Engineers or candidates who have previous experience in the communications industry and a preparedness to undertake comprehensive training. Yours will be the responsibility to support either the 2200 VS range of equipment or the word processing systems, where you will have a minimum of six months experience of mainframe, mini or word processing equipment maintenance and knowledge of the associated peripheral devices to board level repair.

In both instances you should be capable of logical thought, be self motivated and prepared to take responsibility for the service and support at a client base in a geographical zone. Your responsibility will span installation, fault diagnosis and repair-replace to component level.

Contact: Valerie Holl on: 01-935 0671 (24 hour answering service).

SUPPORT ANALYST BASED NW1 — TO £8,000 + car

Working from a branch office and in the sales environment you will be responsible for pre- and post-sales support on the 2200 VS equipment range. Your activities will span technical proposal submission, negotiations, demonstration, project development and team control to the full implementation of the computer systems.

The successful applicant will have a sound knowledge of IBM OS/VS software, COBOL and/or ASSEMBLER languages combined with a sales empathy. A distinct advantage would be that of a previous background with a manufacturer or service organisation.

Contact: James Plummer on: 01-935 0671 (24 hour answering service).

SCR

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA

Specialist Computer Recruitment Ltd

Computer People

VLI group — Recruiting for Clients in the UK and Overseas
Computing Services Association
VLI House 68 69 St Martin's Lane London WC2N 4JS 01-240 2431

What company is prepared to offer £24,000?

Why are they looking for a TECHNICAL SUPPORT MANAGER DESIGNATE?

Why will they fly you to KUWAIT before you decide?

A leading Gulf trading company based in Kuwait is the exclusive distributor for a major mini manufacturer. They offer the security of working for a large company but the D.P. division has all the flexibility of a small expanding unit. In line with this expansion they wish to recruit a software specialist capable of becoming their Technical Support Manager in the future.

A software background with a mini manufacturer would be ideal, although large mainframe and teleprocessing knowledge would be entirely acceptable. You will be working in a sales support environment and it is essential that you are capable of dealing with customers and discussing with them their software problems. There will be considerable technical content to this position and you will be expected to handle all new software releases. Initial training will take place at the manufacturer's U.K. premises and will involve both formal lectures and practical experience in one of their departments.

Kuwait is a very sophisticated Middle Eastern country where English is widely spoken. There is tremendous emphasis on outdoor leisure activities and community life, hence we would prefer married candidates. Salary will be tax free and there will be provisions made for accommodation, trips home, education of children etc, but these will be negotiable dependent on the individual requirements of the person concerned. Our client would like to make sure that the association is a long and happy one and they are therefore prepared to pay for you to make a trip out to Kuwait before you make a final decision.

Please contact Caroline Bagley immediately for further details.

ADP

…EMS
…TEAM

- working on a wide variety of interesting projects using advanced softw…
- on a network spanning Europe, the USA linking over 25 DEC Systems
- for a company which is part of the largest bureau operation in the world

We are one of the few remote computing service bureaux who offer a professional implementation service.

Our Systems and Programming department provides this service to our clients in the UK and Europe – producing tailor-made systems using a combination of programme packages and standard languages applied to business orientated applications.

The person we are looking for will manage our Midlands group based in our Birmingham office.

He/She must have gone through a programmer-analyst/programmer-project leader-systems consultant career progression, and must have significant experience in the management and costing of large system implementations together with involvement with a SALES FORCE in a pre-sales/proposal environment.

The MANAGER of this group will enjoy an income package which measures up to the responsibility and authority of this position.

A company CAR is provided plus BUPA plus EXPENSES plus PENSION SCHEME.

If you have a background which is relevant to our needs then contact BERNARD EDWARDS or PETER PEARCE on 01 637 1355, or write to

ADP Network Services Ltd
179-193 Gt Portland St, London W1N 5TB

EXCERPTA MEDICA

is one of the largest scientific information services in the world, adding 230,000 items each year to its database.

We wish to recruit a

PROGRAMMER with 2 years' experience, who is also a
SCIENTIST interested or experienced in
INFORMATION WORK to assist with the development of a new system to meet the challenges of the 1980's.

Remuneration about £8,000 to £9,000 per year

Further details from Prof. G. A. Somerfield, Excerpta Medica B.V., P.O. Box 1126, 1000 BC Amsterdam – The Netherlands.

ELSEVIER SCIENCE DIVISION

Software Engineering Specialists

STRETCH

yourself on the Dorset Coast £6½-8½k

Stretch yourself and advance your career with one of our systems design and software teams involved on major new contracts.

Current projects include circuit-switching and packet-switching, data communication schemes and wide-area urban traffic control systems.

You will be engaged on complex multi-processor, real-time software applications and utilise such minicomputers as the DEC PDP11.

The appointments call for a real-time systems design/programming background. A knowledge of Assembler, Coral 66 or similar would be a distinct advantage.

Not only will the work stretch your ability, it will also lead to rapid salary and career advancement if you can demonstrate the necessary qualities. There's a comprehensive relocation package to this attractive part of the Dorset coast.

Chief Software Engineer
Responsibility for total project management, system design and customer liaison.

Group and Project Leaders
for systems design, customer liaison and to lead programming teams.

Systems Designers/Programmers
to specify, code and test interesting real-time programmes.

FOR THE FACTS AND TO ARRANGE AN INFORMAL DISCUSSION RING (020 13) 5161 Ext. 2028. REVERSE CHARGES.

Alternatively, write with brief details including present salary, to J. G. Griffiths, Plessey Controls Limited, Sopers Lane, Poole, Dorset BH17 7ER.

PLESSEY

UNIVERSITY OF ABERDEEN
DEPARTMENT OF COMPUTING SCIENCE

Applications are invited for the post of

LECTURER

Candidates will be expected to hold a good honours degree in Computing or a related subject and have at least three years relevant postgraduate experience. Preference may be given to candidates with experience in … data processing … processors and communications …

Salary on scale £4,232–… per annum … appropriate placing.

Further particulars from the Secretary, The University, Aberdeen, with whom applications (two copies) should be lodged by August 8th, 1979.

THE UNIVERSITY OF ASTON IN BIRMINGHAM

PROJECT PROGRAMMER

A vacancy exists for a … a research group which is … bibliographic information … conjunction with the … Information Centre …

If you're on the way up in Systems Development, we'd like to meet you half~way

At Derbyshire County Council we're deeply interested in computers and what they can do for us.

That's why we maintain a 45-strong Systems Development Section within the Computer Division of the County Treasurer's Department.

The Section is involved with a wide range of work for the Council (including Police HQ), nine District Councils and the Area Health Authority. Equipment includes an IBM 3031 (6MB) under OS/VS1, which also supports CMC 'Reality' and 'Sovereign' and Prime 300/350 minis. Programming aids include 'Quota' and 'Eastview'.

Currently we're looking for more men or women to join the team: ambitious people who are on the way up in software development.

And we'd like to meet them halfway, before natural flexibility of mind becomes hardened by routine.

Right now we need:

DEVELOPMENT STAFF

£3732 - £6060 (pay award pending from 1 July 1979)

These posts carry the titles 'Senior Programmer' or 'Systems Analyst Programmer' according to position on the salary scale, which allows progression (e.g.) from £3732 to £4245 to £4773 to £5232 to £5727 in successive years according to merit. Salary on appointment will be dependant on experience.

You should have at least one year's experience of IBM equipment, plus a knowledge of PL/1 or Assembler.

We are based in the attractive old Peak District town of Matlock, which is within easy reach of Nottingham, Derby and Sheffield. A scheme exists for payment of lodging and removal allowances to householders.

For an application form, please write to the County Treasurer, PO Box 2, County Offices, Matlock, Derbyshire DE4 3AG. Alternatively, telephone P.C. Widdeson on Matlock (0629) 3411, extension 7760.

DERBYSHIRE County Council

Where can Systems Analysts get the most out of the system?

Only in a company that's growing faster than its competitors.

Only in a company with a 'software first' design philosophy.

Only in a company far-sighted enough to realise that compatibility is the key to the future.

Only at Prime.

Prime Computer designs, manufactures and markets a broad range of powerful, cost effective computer systems with compatible architecture and using the same software. These systems have established new price/performance standards for inter-active multi-user applications. Software developed on central sites can be distributed to run on smaller systems at remote sites. Moreover, by utilising our powerful network capability, distributed processing is a reality.

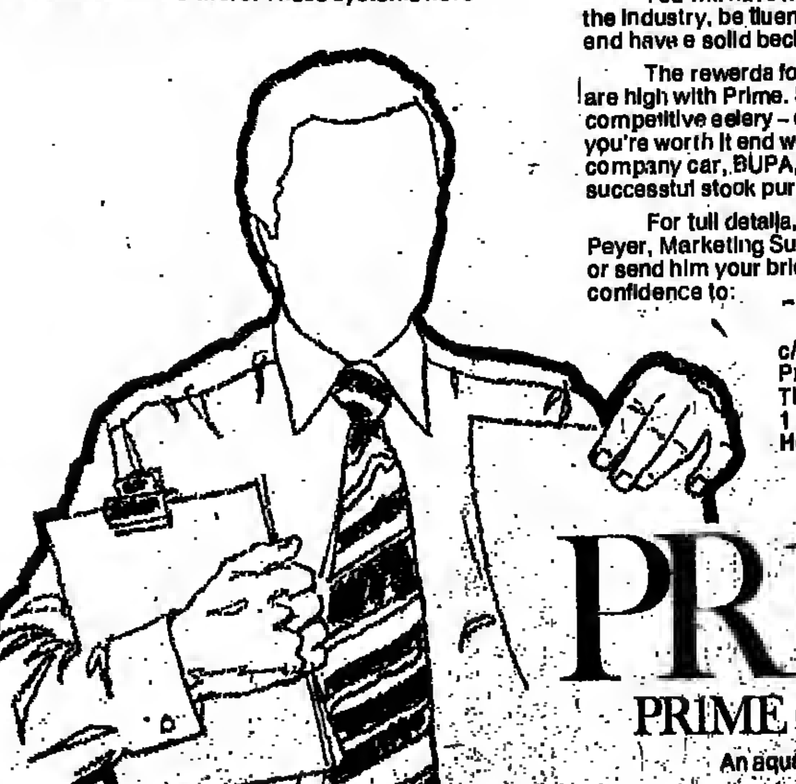
You will be working in field or central systems support teams. The field positions encompass all areas of pre-sales, installation and post-sales systems support, whereas the central system support positions are ones of greater specialisation.

You will have had several years' experience in the industry, be fluent in at least one major language and have a solid background in your discipline.

The rewards for working on your own initiative are high with Prime. So come looking for a competitive salary – all you have to do is prove you're worth it and we'll pay it. The benefits include a company car, BUPA, a pension scheme and a successful stock purchase plan.

For full details, please contact Patrick de Peyer, Marketing Support Manager, on 01-572 6241 or send him your brief career details in utmost confidence to:

c/o Employee Relations,
Prime Computer (UK) Limited,
The Hounslow Centre,
1 Lampton Road,
Hounslow, Middlesex.



PRIME
PRIME COMPUTER
An equal opportunity employer.

DR AGENCY

We know where the good jobs are!

	SALARY
LEEDS	
Senior Analysts These are senior positions calling for a generally broad commercial background. Some experience of manufacturing and production control systems. Self starters only please (Ref OR.1)	£7000
Systems Analysts A number of leading ICL users in the Leeds area have vacancies for experienced analysts. Industries and applications vary widely. Salary will reflect experience (Ref OR.2)	to £6250
Analyst Programmers Challenging environment offers first class promotion prospects together with every opportunity to widen experience. Some systems analysis also. BASIC and ideally a knowledge of PDP11 hardware and software. (Ref OR.3)	to £5500
Programmers Experienced COBOL programmers are required by a number of organisations. Particularly attractive vacancies in Leeds within ICL installations including 2900. All levels of experience required. (Ref OR/4)	to £6000
Programmers Very interesting vacancies for experienced programmers. Ideally knowledge of PDP11 hardware and ORS, RSPS and RSX 11. High level languages preferred and BASIC a particular advantage. (Ref OR 5)	to £5500
WEST YORKSHIRE	
Systems Analysts Excellent opportunities in IBM installations. Applications cover finance, stock control, manufacturing and general administrative systems. Whatever your experience you should talk to us. (Ref OR 6)	to £6500
Programmers COBOL programmers with from 1 years experience are needed throughout this area. Previous IBM experience useful particularly including knowledge of DOS and CICS (Ref OR 7)	from £4800
BRADFORD	
Programmers A major ICL installation in Bradford wishes to recruit programmers with 1 years experience in PLAN 2900 series hardware. Excellent prospects, benefits and career progression (Ref OR 8)	£6000
HUDDERSFIELD	
Systems Analysts A well known company with an excellent track record wishes to recruit additional systems analysts. IBM background and manufacturing systems experience useful (Ref OR 9)	£6250
MANCHESTER	
Senior Analysts There are outstanding opportunities for good systems analysts to really make their mark in a dynamic environment. Good systems and programming background. General commercial applications (Ref OR/10)	£7250
Programmers Interesting vacancies for programmers at all levels of experience. Languages required are RPG II, COBOL, BASIC. Most mainframes and a number of minis (Ref OR 11)	£6000
NOTTINGHAM	
Analyst/Programmers If your field is minis and your language BASIC – then this could be what you are looking for. PDP11 including RSX11 an advantage (Ref OR/12)	£5500
GLASGOW	
Programmers Programmers required for interesting applications including minis. Languages should include COBOL and there is also scope for programmers with ASSEMBLER and BASIC (Ref OR/13)	to £5500
DUBLIN	
Analyst/Programmers Very good chance to work in a stimulating organisation using minis. BASIC is a requirement and some previous experience of analysis work an advantage (Ref OR/14)	to £5500

Interested? Send coupon or 'Phone Cathy Scott

NAME ____________ AGE ______
ADDRESS ____________
PHONE: HOME ____________
BUSINESS (will be used discreetly) ____________
YRS ANALYSIS ______ YRS PROGRAMMING ______
MACHINES USED ____________
LANGUAGES USED ____________
SALARY ____________
SALARY REQUIRED ____________
JOB SOUGHT ____________
REP No ____________

DR AGENCY

DATA RESOURCES AGENCY · FREEPOST · HARROGATE
NORTH YORKSHIRE · HG1 5BR · TELEPHONE HARROGATE 50986

MYRIAD PROGRAMMER

SMALL TEAM ENVIRONMENT

N.W. LONDON (NEAR M1) **£4750-£5500**

Our client, one of the UK subsidiaries of a large American conglomerate, has recently installed an ICL 2903 and now require an experienced programmer to assist in the implementation of a complete range of new systems.

As with most successful organisations, extensive dependance is put on the speed and accuracy of information made available to support company policies and decisions.

The successful applicant, with at least EIGHTEEN MONTHS' COBOL programming experience gained in a commercial environment, will work closely in a small and friendly installation where being a member of a small team will give you the opportunity of gaining total system involvement and the possibility of gradually exercising your own analytical potential.

This is an excellent opportunity for a person to consolidate their programming skills in a professional environment and is supported by the offer of a realistic salary and attractive company benefits.

Ref. N2/1207

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

Professional DP Training Sales Consultant

London
Remuneration to £9,500 plus car

BIS Applied Systems Limited is a member of the Business Intelligence Services Group which employs over 200 staff in data processing and has a turnover approaching £7m. A leading DP consultancy, BIS Applied Systems is known throughout the UK and overseas for providing practical training to DP management, their staff and their users.

Responsible to the Manager of Training Sales, the consultant will sell and support the company's training services through direct contact with DP management and training staff. The role involves identifying training needs and developing career structured training programmes with client companies.

Sales experience, preferably within the DP services industry, together with good communication skills and a readiness to learn are all important requisites for a role with excellent prospects for wider responsibilities in a successful, growing company.

The importance of the post is reflected in a remuneration package including salary, car and company benefits scheme.

Please write or telephone for more details and a Personal History form to Stephen Helms or Derek Potts, Training Division, quoting reference G740, at the address below. Applications are invited from either man or woman.

BIS Applied Systems Limited
York House, 199 Westminster Bridge Road
London SE1 7UT
Telephone 01-633 0866

BIS Applied Systems

SENIOR PROGRAMMER

We are an engineering company committed to a programme of forward planning and development. In preparation for the installation, in early 1980, of a new Univac 90/25 with 3 x 8416 disc drives and V.D.U.'s which will replace a Univac 9300 we wish to appoint a Senior Programmer with a minimum of three year's commercial programming experience in ASSEMBLER (Univac or IBM) and/or COBOL.

Familiarity with on-line programming techniques would be advantageous but is not essential.

If you're the type of person who enjoys improving and up-dating systems, capable of working without supervision you can expect to assume full responsibility for the development and maintenance of our computer systems very quickly.

Interested? Then write in confidence to our Personnel Director, or if you prefer, telephone our Personnel Department on Walsall 26681.

Barton Conduits Limited,
Old Birchills, Off Green Lane,
Walsall, West Midlands.

BARTON

EDINBURGH REGIONAL COMPUTING CENTRE

COMPUTING OFFICERS

The Centre has two vacancies (one part-time) in its Advisory Service for Assistant Computing Officers or Computing Officers.

Currently the main computing services offered to users in Edinburgh University and the Research Council Institutes in Edinburgh Area are based on the Edinburgh Multi-Access system which runs on twin ICL 4-75 and ICL 2970 installations. An ICL 2980 (which also provides a service to Glasgow and Strathclyde Universities) at present runs under VME/B but will change to EMAS in the coming year. In addition, IUF Access is offered to IBM OS/MVT/MVS services at Newcastle and Cambridge, and to CDC 7600 facilities at Manchester.

The Advisory Service is a focal point within the Centre where users can raise queries regarding use of these and other systems, and successful applicants will join the team of advisors (after initial training) as part of their duties. The full-time post will also involve a substantial assignment in one of a number of areas such as support in the Centre's use of external services, support to some of the Centre's own system software or consultancy on selected applications packages. The part-time post (hours of work by negotiation) will also involve a limited amount of other work besides advising.

Applications are invited from graduates with some computing experience either during or since their degree course. Depending on the extent and relevance of this experience, initial placement would be on the Assistant Computing Officer grade (£3776-£5480) or Computing Officer grade (£4333-£7521) effective October 1979. Participation in the USS pension scheme is required. For an application form and further details contact (quoting reference 7015) **The Secretary, University of Edinburgh, Old College, South Bridge, Edinburgh EH8 9YL**, to whom completed applications should be returned by 31st July 1979.

LEEDS CITY COUNCIL
DEPARTMENT OF ADMINISTRATION
COMPUTER SERVICES DIVISION

The Council currently operates a large ICL 1904S with a variety of computer terminals (including mini-computers) and a wide range of computer applications running under the GEORGE 3 operating system. Consideration is being given to the replacement of the ICL 1904S and evaluation of alternative equipment is in hand. The following vacancies exist in the Development Branch.

SOFTWARE ANALYST PROGRAMMER

SO1/2 — £5232 to £6060 p.a. (inclusive) (pay award pending)

Applicants should have at least three years' COBOL and/or PLAN programming experience on an ICL 1900 computer under GEORGE 3, and preferably knowledge of ICL utilities, Communications Manager Software and Operating System maintenance. Experience of programming staff supervision and training is also desirable.

SOFTWARE PROGRAMMER

T1/5 — up to £5073 p.a. (inclusive) (pay award pending)

Applicants should have two years' experience of COBOL, PLAN, FIND 2, GEORGE 3 and/or Communications Manager.

Applications in writing to: Personnel Officer, Department of Administration, Room 306, Civic Hall, Leeds LS1 1UR

CLOSING DATE: 14 days after appearance of advert.

LEEDS

SUSSEX POLICE

Police Headquarters, Lewes

SYSTEMS ANALYST

New venture . . . challenging opportunity

Salary in the scale rising to £5,568 p.a. (pay award pending).

You will be working alongside police officers as part of a project team formed to investigate computer applications to support operational policing.

This is an unusual opportunity to come in on the ground floor of an entirely new venture; you will be expected to make a full contribution in the field of statistical models and in [illegible] analysis and application of data to the required systems.

Relocation scheme plus other usual Local Government benefits. In addition you will enjoy excellent staff restaurant facilities.

For further details and application form please contact Personnel Officer, Police Headquarters, Malling House, Lewes, East Sussex. Tel. 5432, ext. 308.

SOUTH WEST UNIVERSITIES REGIONAL COMPUTER CENTRE
University of Bath

ICL 2980

The Regional Centre is a leading 2900 site. We operate a large 2980 system under VME/B and provide computing services to Universities in the South West over a [illegible] communications [illegible]. Following an internal promotion applications are invited for the post of

SHIFT SUPERVISOR

Applicants must have relevant experience in a large scale computer environment (2900 experience not essential). Important attributes are initiative, enthusiasm and a professional approach to operating.

Salary (inclusive of three-shift allowance)

£4500-£5370 (under review)

Application forms and further particulars (quoting [illegible]) from Personnel Officer, University of Bath, Claverton Down, Bath BA2 7AY. Closing date 27.7.79

1900 COBOL

S. LONDON

SENIOR PROGRAMMERS
£5700-£6800

PROGRAMMERS
£4800-£6000

Development work in Project Teams

01-402 9355

T P PROGRAMMER

SOUTH HERTS.

SOME EUROPEAN AND U.S.A. TRAVEL
c £10,000 p.a.

There can be few openings for T.P. people as technically challenging or as technically advanced as this.

You will be working for a World Leader, a respected major Corporation at the forefront of electronics and communications technologies.

Among your responsibilities will be as the last line of support for certain products, thus you will be respected as the leading authority throughout Europe when troubleshooting sytems.

In addition, you will be a key member of a team developing an IBM Compatible Comms. Controller which will be used in an X25 Protocol, Packet Switching environment.

Your communications experience will have encompassed BTAM, VTAM, a TP Monitor such as CICS or SHADOW and the 3270 Series both Local and Remote.

Experience gained on more complex software such as SNA, SDLC or IMS/DC will also be extremely relevant.

If you are a Teleprocessing professional and want to be recognised as such, this is your opportunity.

Please call me, **GEOFF MARSH**, on **01-499 4501** to arrange an early meeting.

REF RW 28/3

FORTRAN PROGRAMMERS

£ Neg'l CITY BASED

Move up to Customer Support in the Commercial World

Are you a FORTRAN Programmer? Have you had enough of pay restrictions, career restrictions and poor management?

All of this can be changed; careers can be achieved in:

- ★ **Sales/Sales Support**
- ★ **Consultancy**
- ★ **Management**

Salary is dependent only on ability; projects are mostly development with a range from small custom-built enhancements right through to multi-man year systems.

Program development is via terminals, end in-house training facilities are first-class. So if you want a chance at a real career give me a call now.

GEOFF MARSH on 01-499 4501 REF. 28/2

MICRO-PROCESSOR SOFTWARE DESIGNERS

To £7000 + Relocation

FOR NCR'S IMPORTANT AND GROWING SOFTWARE DEVELOPMENT FACILITY IN DUNDEE

Consider the following:

1. NCR is the world's No. 2 supplier of computers and related systems.
2. NCR was one of the earliest users of Micro-Processor technology and is, therefore, one of the most experienced.
3. A new multi-micro architecture for intelligent terminal products.
4. A well-planned rate of expansion.

—and all these with the social benefits that go with living on Tayside.

NCR Dundee is rapidly becoming established as an important centre of original software development for NCR worldwide. Current projects include a block-structured language compiler and control software for specialized self-service terminals. Others are planned, and there is a continuing dialogue between Dundee and other NCR development centres around the world.

There are several vacancies, all brought about by new product development. For graduates with up to 5 years' experience, salaries are very competitive (i.e. to £7000) and are currently under review. Conditions of employment generally are excellent and a generous relocation package is offered where appropriate.

If you feel that there might be something in all this for you, then give me, Tony Baker, a call on 01-499 4501, or write to me at the address below, quoting reference RW 28/1.

hutchinson-scoggins recruitment
47/48 New Bond Street (entrance in Maddox Street) London W1Y 0HE Telephone 01-499 4501

MYRIAD

SYSTEMS CO-ORDINATOR

NR. BRENT CROSS **c £7500**

An extremely challenging opportunity has arisen within our client's organisation for an experienced professional to co-ordinate the development of a major on-line application.

This is an ideal opportunity for a self-motivated and mature person to interpret the requirements of user departments and relate these in system design, specifications and programming.

The company are one of the leading manufacturers and suppliers of medical life support systems and are an extremely successful division of one of the largest public companies within the UK. They have recently ordered an IBM System 34, due for delivery in March, 1980, with the intention of utilising the IBM MAPICS packages to interface in the development of an on-line order processing system and management information reporting.

Ideally applicants should be able to offer a minimum three years' data processing experience where they have developed commercial/financial systems using RPGII and have progressed in systems analysis. It is envisaged that the successful candidate will assume project leading responsibilities and contribute in the initial planning stages of future systems.

Working in a very pleasant office environment, a full range of company benefits support this challenging position.

Ref. N3/1207

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 (24 HOURS)

PROGRAMMERS & OPERATORS
FREE LIST
of vacancies to suit you
ALL AREAS
Phone now 01-626 0171
The best CHOICE of Computer Appointments
CHOICE 129 Cannon St, London, EC4 Tel. 01-626 0171

GREATER MANCHESTER COUNCIL
COUNTY ENGINEER'S DEPARTMENT

COMPUTER OPERATOR/PROGRAMMER

£1821/£4832 p.a. inclusive

To assist in the operation of a large PRIME 400 computer installation and to develop computer programs for the various applications areas within the department.

The installation consists of a 640K byte PRIME 400 Computer with three exchangeable disc drives, two magnetic tape units, line printer and flat bed printer. Users have access to the computer via VDU's located in the design offices.

Preference will be given to applicants possessing experience in both computer operations and FORTRAN programming, although training will be available for less experienced staff.

Applications by letter giving all relevant details including age, qualifications, experience and two referees to the County Personnel Officer, County Hall, Manchester M60 3HP by 26th July if possible, please include a telephone number where you may be contacted.

WESTFIELD COLLEGE
(University of London)

CASE Studentship with INMOS in MICROPROCESSOR DESIGN

Applications are invited from those who have (or expect shortly to have) a good honours degree in Computer Science or related subject. The successful applicant, who will be expected to register for a PhD, will divide his time between the University and the Bristol laboratories of INMOS.

The research goals are not merely to design a microprocessor, but also to develop relevant simulation techniques and study the design-simulation cycle.

Applicants should write or phone Dr Peter Denton, Computer Science Department, Westfield College, Kidderpore Avenue, Hampstead, London, N.W.3 (01-435 7141).

THE HATFIELD POLYTECHNIC

Computer Operator
Ref. 249

Senior Computer Operator
Ref. 249

We have recently installed three new multi-access computer systems to support over 200 simultaneous terminals and have two vacancies in our operations team which works on a three-shift basis. Although preference will be given to candidates with experience of DEC equipment for the senior post, the essential requirement for both posts is a sound background in computer operations.

The computers (a DEC 1091, DEC 2020 and PDP 11/70) will be housed in a new building which has excellent staff facilities.

Salaries.
Senior Operator:
£4442-£4927 (bar) — £5495 (AP3/4).
Operator: £3379-£3912 (bar) — £4347 (Clerical I. AP1/2) inclusive of shift and other allowances.
Trainees may be appointed at a lower salary.
For further details and an informal discussion ring Gordon Brand on Hatfield 68100 Ext. 472, or write to the Staffing Officer, The Hatfield Polytechnic, P.O. Box 109, Hatfield, Herts. AL10 9AB.
Closing date for applications: 27.7.79.

Graduate plus two years?

If you have two years' computing experience now is the time to acquire some microprocessor expertise.

At Marconi Avionics we provide training in design techniques and CORAL. At plants in Borehamwood, Welwyn Garden City and Redlett, all in Hertfordshire, we are writing software for TEXAS, MOTOROLA and INTERSIL microprocessors and we need programmers and engineers for several small projects.

So if you are a graduate with two years' programming or hardware experience and are interested in working with microprocessors please ring Chris Hill on 01-953 2030 ext. 3449. Alternatively write to him at Marconi Avionics Limited, Elstree Way, Borehamwood, Hertfordshire, or call 01-207 3465 (Day or Night), and we'll send you more information.

Please quote reference MA79105. These posts are open to both men and women.

MARCONI AVIONICS
A GEC Marconi Electronics Company

ANALYST/PROGRAMMER

Stone & Webster Engineering Ltd. are part of a multi-million Corporation supplying engineering expertise mainly in the petrochemical and process industries. We are situated in new offices in the Gray's Inn Road.

We have a HARRIS 1255 computer with 500k byte MOS Memory under VULCAN 6 virtual operating system for batch and timesharing processing are looking for an analyst/programmer to join our commercial developer team who are designing and writing an integrated corporate accounting system using direct data entry and interactive processing. Program development is in timesharing mode using ANSI 74 COBOL.

Applicants should have at least 3 years analyst/programmer experience COBOL. Experience with database management, transaction processing online systems and data entry would be an advantage as would be experience been in the areas of financial accounting, project planning and control management information systems.

The Salary offered is very attractive and fringe benefits include 4 weeks' vacation, LVs, pension scheme, season tickets, etc.

Please write or telephone Mr. J. G. Hudson.

STONE & WEBSTER ENGINEERING LIMITED,
STONE & WEBSTER HOUSE,
236 GRAY'S INN ROAD, LONDON WC1X 8HA.
TELEPHONE: 01-837 2855 EXT. 3709.

STONE & WEBSTER

Senior Analysts & Programmers

North West, c. £7,500

A leading electrical engineering company, part of a major British group, seeks additional Senior Analysts and Programmers as part of its planned Data Processing expansion. These plans include the installation of new equipment and the development of real-time systems. Specific areas for development are Order Processing, Production and Inventory Control and Management Accounting. Duties will also include the improvement of existing computer systems. Applicants will have had experience of developing computer systems in the areas specified and should preferably have managed a small project team.

C.G. Moores, Ref: 24189/CW Senior Analysts, Ref: 24190/CW Senior Programmers

These positions are open to male or female candidates. Please telephone in confidence for a Personal History Form to:-

MANCHESTER: 061-236 8981, *Sun Life House, 3 Charlotte Street, M1 4HB.*

Hoggett Bowers
Executive Selection Consultants
BIRMINGHAM, CARDIFF, GLASGOW, LEEDS, LONDON, MANCHESTER, NEWCASTLE and SHEFFIELD.

PROGRAMMER

We have a major development programme which involves

* the implementation of a large branch terminal network using IBM 3600 equipment.
* the implementation of a database system
* the extension of local TP using 3270's

We need to enhance our existing team to ensure the success of this demanding programming and are thus able to offer a Programmer an exciting opportunity to extend his/her experience.

Applicants should have a minimum of two years' experience using PL/1 or Assembler. Preference will be given to applicants with experience using DL/1 database system or 3600 financial terminal equipment.

This appointment will be based in our Head Office in Bristol. A realistic salary, which is reviewed annually, will be offered, and there are attractive fringe benefits, which include a contributory Pension and Life Assurance scheme, assisted membership of BUPA/WPA and staff house purchase facilities.

Please write in the first instance with brief details of your age, qualifications and previous experience to **The Personnel Manager, Bristol & West Building Society, P.O. Box 27, Broad Quay, Bristol BS99 7AX.**

Bristol & West BUILDING SOCIETY
A MEMBER OF THE BUILDING SOCIETIES ASSOCIATION

European Organization for Nuclear Research
Organisation Européenne pour la Recherche Nucléaire

CERN, a European Research Laboratory situated near Geneva, has a vacancy for a

COMPUTER CONSOLE OPERATOR

in its central computer service. This is at present based upon CDC 7600, 6600, 6400 computers as well as IBM 370/168 and 3032 systems.

The post involves a shift work including weekends and public holidays.

Candidates should have successfully completed their education to at least GCE "A" level or equivalent preferably including computer science or other scientific subjects. At least two years' experience of computer operation including some IBM experience is desirable. A knowledge of French would be useful.

For application forms, please write to
Head of Personnel, CERN, 1211 Geneva 23, Switzerland quoting the reference DD-CO-79/1

So you know all about Systems Software

How about Computer Systems to Design Systems Software?

The brief for this job is to assist in the design and implementation of a methodology for the controlled evolution and maintenance of systems software.

The hardware centres on a major family of mainframe computers together with new systems currently under development.

The location—Southern Germany.

We are looking for:—

Systems Designers

With at least three years relevant experience to work on the development of technical procedures for a system of computer aided design to be used on operating systems software.

Senior Programmers

With several years' experience of programming as part of a major project team. The job will be of particular interest to programmers with an interest in the development of systems software.

The main qualifications we require are experience and innovative ability.

The company—an international organisation based in Germany with a first class record in the business world and a reputation for using the skills and talents of their people with imagination and with commonsense.

Background—the people we require will have extensive experience of at least two of these languages—PL1, Cobol, Assembler, SPL.

To make a contribution to this project you will need a clear understanding of how systems software is developed at present and more to the point, how it should be developed in the future.

In return we can give you the satisfaction of working on the project which will produce the industry standard for systems software development in the '80's.

Extremely attractive salaries are being offered for these positions together with the usual benefits associated with a large international organisation.

The Country—Living in southern Germany can be a reward in itself. The cities offer an enjoyable way of life and the countryside is beautiful and unspoilt.

If you are interested in applying for a position working on this project please write in the first instance giving details of career to date and qualifications to:—

Altmann & Partner GmbH
at either:—
21, Mount Ephraim Rd., or Weissenportz,
Tunbridge Wells, Kent 5203 Much, West Germany
0892-25702 010-49-2245-2824
Interviews will be arranged in London.

Deputy Supervisor -Software

Switzerland

An important international bank is urgently seeking a capable systems man for its newly-installed centralised computer system.

Based in Switzerland, he will be deputy to the software Supervisor and be responsible for software systems in connection with the 370/148 VM centre, with VM/370, DOS/VSE, CICS, RJE, Power and VTAM.

The right man will have had at least four years' systems programming experience, one year of which should have been in the capacity of senior or deputy. A good knowledge of on-line systems, JCL and work control procedures, as well as an excellent insight into software applications is essential. With English as his mother tongue, he should also have a working knowledge of German.

This is a responsible position with career prospects, and salary and other conditions are excellent.

Please write, in strict confidence sending a Curriculum Vitae to:

PA Management Consultants AG.,
Kreuzstrasse 26, 8008 Zurich, Switzerland. Tel: Zurich 34 69 46.

PA

OPERATIONS MANAGEMENT
C£6500
LUTON

WHITBREAD

Whitbread London are installing a Computer Centre in their new Luton offices, based on a Honeywell 64/30 mainframe, four 725 minis and a Ventek datapoint. They now need a **Computer Centre Production Manager** to run the new operation efficiently, manage the Centre staff and provide an effective batch and real-time service to the Company.

If you are currently working in a fairly senior capacity in operations (eg. in a supervisory or managerial position), this new vacancy could represent an exceptional career move with excellent future prospects within the Group. In addition to the salary above, the Company offers substantial benefits, including assistance with relocation if necessary.

For more details about this job or the Company, please telephone Sharon Lendau at SBS on 01-734 0562 (24hr), or write with a brief C.V. to the address below:

SBS RECRUITMENT SCIENTIFIC & BUSINESS SYSTEMS LTD **29-31 OXFORD STREET, LONDON W1R 1RE**

ANALYSTS
£6,000~£8,000
London W.1

Looking for an above-average career opportunity?
Check whether these features coincide with your objectives:

- Use of sophisticated techniques — including Database, Communications and COM.
- Latest hardware — both mainframe and minis.
- Plenty of new development work, with close involvement with users.
- Good working conditions, friendly atmosphere, flexible hours.
- Substantial training budget.
- Good prospects of advancement to mengement posts.

Due to an expanding volume of work, our clients, a major bureau installation, have asked us to assist them to recruit Systems Analysts at several levels, ranging from Junior Analyste (say with two or three years in DP, including some analysis), to Senior Analysts, with appropriately heavier experience and team leadership capability. There are no specific applications or hardware requirements; the need is for presentable, well-educated DP professionals.

To learn more about these first-class career openings, ring us in confidence, quoting ref. 672CW or leave a message on our answering machine and we'll contact you.

EDP SYSTEMS LTD
52-53 Margaret Street, London W1N 7FF
Telephone 01.637 5796 (24 hours)

COBOL PROGRAMMERS
★
London & S.E. England
★
Salaries to £7,000
★
call
MACROLOGIC
(recruitment consultants)
01-278 5634

SUNDERLAND POLYTECHNIC
FACULTY OF ENGINEERING
DEPARTMENT OF ELECTRICAL, ELECTRONIC & CONTROL ENGINEERING

RESEARCH ASSISTANT

Applications are invited from recent graduates or students graduating in 1979 for the post of Research Assistant to work in the field of parallel processing with microprocessors. Prospective candidates should hold or expect to obtain a good honours degree in any of the following disciplines: Electronics, Control Engineering, Computer Engineering or Mathematics.

Candidates will be expected to register for a higher degree, M.Phil./Ph.D. Telephoned enquiries can be made to K. M. Abbasi, Tel. St'land 78191, Ext. 18. Salary for this post, which is tenable for two years from 1st September, 1979, with a possible extension up to three years, is £2,778 to £3,084 per annum (under review). An application form may be obtained from the Personnel Officer, Sunderland Polytechnic, Chester Road, Sunderland, SR1 3SD, and should be returned as soon as possible.

NEW MALDEN

Our Client, a leading international firm of security printers, are shortly upgrading their computer equipment to an ICL 2904, and have vacancies for a Systems Analyst and a Programmer.

Systems Analyst c. £7,000

This successful company are about to expand their existing management information system and require a systems analyst for the development work on this and future applications. Applicants should have at least 3 years' relevant experience preferably using ICL equipment and RPG II.

Programmer c. £5,000

A rare opportunity for a programmer with a minimum of 18 months' experience, preferably using RPG II or ICL equipment, to join a small team in an expanding department.

Both positions offer excellent fringe benefits which include 5 weeks' annual holiday, pension and life assurance schemes and an active sports and social club.

Ref: CW 28/1.

Please contact:

TYLIN

CHRIS TILLBROOK
A division of Tylin Management Systems Ltd.
Leon House, High Street, Croydon CR9 3NH. Tel. 01-680 2323
A Member of the TATE & LYLE GROUP

Member of Computing Services Association

Yorkshire Regional Health Authority

Computer Operator

£3,452-£4,121 (Review pending) plus shift allowance of 10% (candidates from outside the Health Service will commence at the minimum of the scale)

A vacancy exists for an experienced Computer Operator to join a team of operators working a two shift system covering five days per week.

The Authority operates an ICL 1904A with 128K core, 8 x EDS60, 8 x 1600 bpi tape drives, 2 line printers, card reader, paper tape reader and communications. Candidates should have experience of operating in a medium to large ICL installation using GEORGE 3.

Application forms and job description may be obtained from the Regional Personnel Officer, Yorkshire Regional Health Authority, Park Parade, Harrogate, North Yorkshire. Please quote Ref. No. 41.

Closing date 27 July 1979.

UNIVERSITY OF GLASGOW
COMPUTING SERVICE

PROGRAMMING ADVISOR

Applications are invited from candidates holding a university honours degree or equivalent for an appointment as Programmer or Analyst on Grade IA or II of the scales for Other Related academic staff, for which the salary scales as at 1st October 1979 will range from £4333-£7521 and from £7227-£8992. The post is primarily concerned with the provision of advisory, consultancy and related information services associated with a large ICL 2978 computer which runs both batch-processing and interactive (MAC) work under the VME/B operating system. A knowledge of at least two high level programming languages, together with experience of applications programming, is required.

Further particulars may be obtained from the Secretary of the University Court (Room 18), University of Glasgow, Glasgow, G12 8QQ, with whom applications (8 copies), giving the names and addresses of three referees, should be lodged on or before 31st July 1979.

In reply please quote Ref. No 4477P

Don't underestimate your Dec 10 experience. Why?

Because Marconi Avionics – innovators extraordinary – are pioneering a brand new application of DEC 10. It involves a major long-term project which entails the real-time simulation of the world!

It's a project worthy of any ambitious and technically-dedicated Analyst or Programmer; and the opportunities for career development and diversification are unusual to say the least.

Don't underestimate your DEC10 experience. Initial salaries are excellent, and will reflect the importance of the project in hand.

For full details, please contact Chris Hill, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. WD6 1RX or telephone him on 01-953 2030 ext. 3449 or call 01-207 3455 any time (day or night) and we'll send you more information.

MARCONI AVIONICS
A GEC-Marconi Electronics Company

EXPERIENCED SENIOR COMPUTER OPERATOR

with some knowledge of communications hardware to be responsible as Communications Supervisor for monitoring the functioning of the Communications equipment and lines associated with the Computer Centre's computers. Salary scale £3078-£3774 p.a.

Application form from **Assistant Secretary, Personnel Office, University of Birmingham, P.O. Box 363, Birmingham B15 2TT. Ref. 880/C/192**

EUROPE CALLING

We have a whole list of excellent positions currently available throughout mainland Europe. call No. below (reverse charge) for full details

OS-VSI Systems Programmer (long contracts £400 p.w. +)
Service Engineers for Minis (Permanent job for good pay)
Oek specialists (long contracts, excellent rates)

Many many many more

Phone Wellis (European) Data Services Ltd. on Holland 040-441 821 or write to: Penelopestreat, 183 Eindhoven, Netherlands

---

CALMA is an American-based company specialising in producing computer systems for design applications. These applications cover the areas of integrated circuits, printed circuit boards, mapping and mechanical design. We are growing very rapidly and will shortly open a new European customer support facility located in Kingston, Surrey. To support this expansion we require the following additional staff.

1. APPLICATIONS ENGINEERS

Candidates should possess experience in either mechanical design or printed circuit board layout, together with some software knowledge. Familiarity with Data General RDOS would be an advantage.

2. FIELD SERVICE ENGINEERS

Locations, Edinburgh/Glasgow and Manchester. Applicants should possess several years' experience of computer system field maintenance and be capable of working on own initiative. Experience of plotting equipment and/or mini-computers would be an advantage.

3. HARDWARE TECHNICAL SUPPORT

Applicants should possess several years' experience as computer field service engineers. Experience of mini-computers or plotters would be particularly relevant.

4. HARDWARE REPAIR SHOP TECHNICIANS

Although previous computer experience would be desirable, applicants possessing a sound practical and theoretical grasp of electronics would be acceptable, as full training will be provided.

COMMUNICATIONS NETWORK MANAGER

This position is likely to prove attractive to an experienced computer field service engineer who has specialised in communications and now feels able to manage and support a small team responsible for a large, complex comms network, linking several large computer centres and associated terminal equipment.

Conditions of employment will reflect the high grade of people being sought and will be very competitive.

Please write in first instance to:-

CALMA COMPANY
10 Barley Mow Passage, Chiswick London W4 4PH or phone 01-994 6477

COMPUTER PERSONNEL APPOINTMENTS LTD.
Career Specialists and Consultants for
D.P. MANAGERS, SYSTEMS ANALYSTS, PROGRAMMERS AND OPERATORS
Midlands, Northern Counties and Scotland
For application forms apply to:-
65 New Street, Birmingham B2 4DU. 021-643 0851 or Tel 01-328 7261

FIELD SERVICE ENGINEERS

£6,000 + 2-ltr. Car + O.T. + S.B. + Bonuses

Our client is one of the World's Leaders in the Mini Computer field with—

Over 20,000 installations world-wide.
Group sales exceeding 1 billion dollars.
Extensive range of high-performance systems.

Are offering exciting opportunities in London and Home Counties to ambitious Service Engineers.

If you need—

Basic salary c. £6,000, 2-litre car. Very comprehensive product training, overtime standby and bonus payments, AND Progressive career opportunities call today — Consultants. Ref. EK2056.

AB EXECUTIVE (KINGSTON) LTD. 01-549 6442

---

datascene

DEC SYSTEMS ANALYST 2 YEARS — CYPRUS PERMANENT OR CONTRACT

Based in Nicosia this appointment will require the individual to design and implement a series of small commercial and industrial systems. As well as leading a team of 4 programmers. A knowledge of DIBOL is desirable.

The individual selected will receive a salary payable in the U.K. or locally, in a country where the cost of living is extremely cheap.

In addition to this they will receive free accommodation and return air flights to the U.K. as well as being eligible for tax free concessions on purchases such as cars.

Apply in the first instance to Bob Edwards, Contracts Manager

AT

Datascene International Ltd.
Sceptre House
169-173 Regent Street
London W1R 7FB
01-439 1856
24 hour answer phone

ARE YOU AN EXPERIENCED SPECIFIER WHO WOULD LIKE TO DEVELOP A CAREER IN MARKET RESEARCH?

If so, we would like to hear from you.

We are RBL, the U.K. arm of Research International, the World's largest full service market research organisation. Our Business & Industrial Group, which is mainly involved in international research, needs an extra person with D.P. skills who would like the opportunity to develop, with training, into the more general executive area of Market Research.

The successful candidate will have not less than 2 years' experience of Market Research analysis specification preferably, but not essentially, using the Quantum Package and familiarity with keyboard terminals and an on-line system are essential.

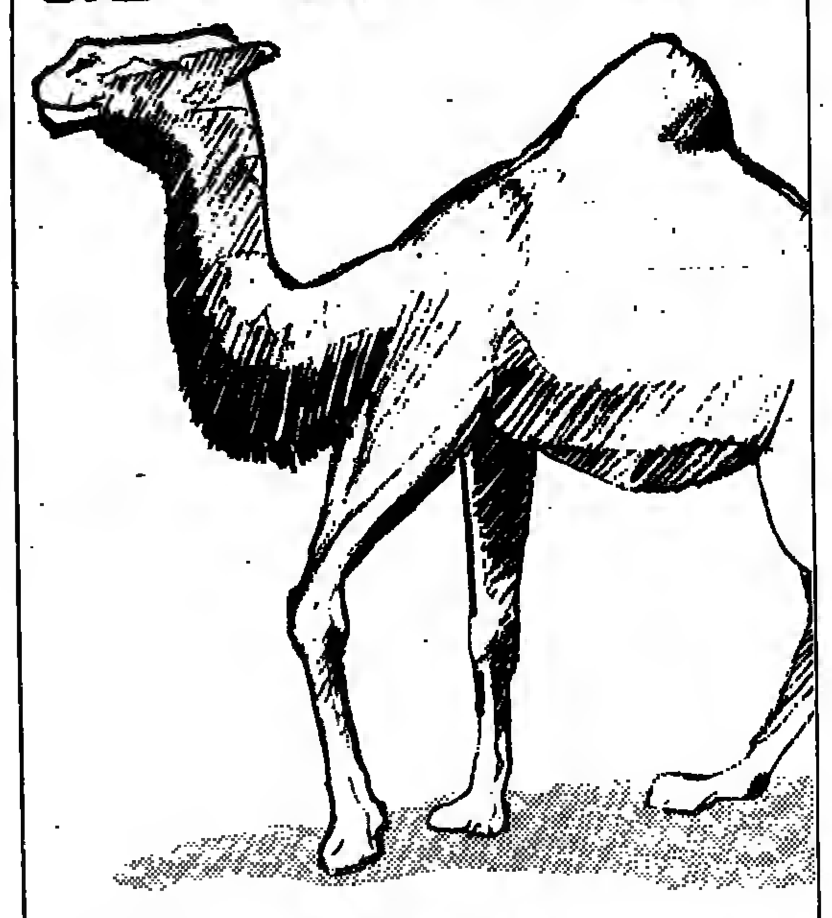
(If you are an experienced Specifier who wishes to move into main-stream market research career development, this is an ideal opportunity.)

Candidates are unlikely to be earning less than £5000 p.a. currently.

Please contact by phone or letter, Philip Barnard (Director) or Don Beverly (Group Head of Business and Industrial Research) at RBL.

RBL
RESEARCH BUREAU LIMITED
P.O. Box 203,
Greenbank, London E1 9PA.
Telephone: 01-488 1366
Telex: 884823.

PROGRAMMERS GOT THE HUMP?



An easy way of getting over the hump is by coming to work for a friendly, progressive company, where you'll be able to tackle really interesting and challenging projects, and also have the opportunity to travel abroad.

If your promised career progession so far has proved to be little more than a mirage, we can change all that – as a multinational organisation your career options are outstanding, and your experience will certainly benefit from our increasing data communications commitment.

We are active in Mini Computers, Micro Computers, Assembler Programming, Real Time Systems, Message Switching and Data Communication Systems. Programming development is conducted in Assembler and high level languages utilising our powerful IBM installation, and target hardware testing is an essential element of systems' implementation.

We're conveniently based on the outskirts of London, beside Cockfosters Underground Station. We'll pay salaries up to £8,000 and we'll relocate you where necessary.

Interested? Than telephone Jim Reynolds (Chief Programmer) on ext. 391 for more information. Alternatively, for an application form, write or telephone Frances Mason (Programmer Recruitment) at ITT Business Systems, Diversey House, Cockfosters Road, Cockfosters, Barnet, Herts. Telephone 01-440 4141 ext. 349.

ITT Business Systems ITT

COMPUTER SUPPLIES

Sales Executives

One of the leading companies in the supplies field, we are looking for representatives between 25 and 35 to fill two attractive positions.

1. West End, N.W. London, Bucks, Berks.
2. S.W. London, S.E. London, Surrey, Hants.

You will be selling a full range of products to computer users including magnetic media, filing and storage systems.

You will earn a good salary (£7000+ p.a.) and other benefits include a company car and four weeks holiday.

Write with details of previous experience to:- I.A. Gilbert Esq. Willis Computer Supplies Ltd., P.O. Box 10, Southmill Road, Bishops Stortford, Herts. CM23 3DN.

WILLIS

A change is as good as a rest.

With a new career, you could feel a new person. And be better off than you thought possible.

Call Dennis Clay, to find out how on 01-680 1955.

PROGRAMMER

Salary £4200-£6,200 p.a. (under review)

The Central Electricity Generating Board invites applications for the post of Computer Programmer in the Station Liaison team of the North Western Region Computer Branch. This team provides computing services to power stations throughout the Region. The person appointed would be based at Bramhall but would initially assist in the commissioning of the plant monitoring and control system at Heysham Power Station. This work would require some time to be spent at the station.

The Region has an ICL 1904S, to be replaced in 1980 by a 2980, with terminals at power stations. The monitoring installation at Heysham is based on Ferranti ARGUS 500 processors.

Applicants should preferably have a degree, or equivalent in a technical subject and have some experience in real time programming. Familiarity with ASTRAL, COBOL, and FORTRAN would be advantageous.

Applications in writing from either sex stating age, experience etc. to the Personnel Manager, CEGB, N.W. Region, Europa House, Bird Hall Lane, Cheadle Heath, Stockport SK3 0XA to arrive not later than 28 July 1979. Please quote reference number 430/CW.

NORTH WEST

METROPOLITAN BOROUGH OF WIGAN
FINANCE DEPARTMENT

COMPUTER PROGRAMMER

Post No. FC9

Salary Grade AP4-5 - £3933-£4761 + £312 supplement (Pay award pending).

Applicants must have at least two years' experience of COBOL or PLAN. The person appointed will be expected to assist in designing, writing and maintaining application systems for an I.C.L 1902T Computer. There are several interesting 'on-line' systems under development, and the successful applicant will be working as a senior member of a programming team.

The commencing salary will be determined according to age and experience.

Application forms available from and returnable to the Chief Personnel Officer, Civic Centre, Millgate, Wigan. Tel: Wigan 44991 ext. 46.

Closing date 27th July 1979.

WES PAC COMPUTER SUPPLY

CAN YOU SELL?

WES PAC's rapid expansion calls for SALES REPRESENTATIVES to develop established territories in S.W./W/N.W LONDON and neighbouring counties. Product/Sales training given in our growing range of COMPUTER SUPPLIES and MAGNETIC MEDIA MAINTENANCE — backed by the renowned WES PAC Services.

GOOD SALARY and commission should take you to at least £5500 in your first year. Cortina estate, pension, good holidays.

If you are lively, active, intelligent, dedicated and keen, then telephone or write to:

CLIVE BOLTON
WES PAC LTD.
184-158 Shoreditch High Street
London E1 6H4
Tel: 01-728 1170 or 04446-43061 evenings
Member of the J + K Group of Companies

SMR Sales & Marketing Recruiters Ltd

SALES EXECUTIVES

The most difficult thing in the world is to be objective about yourself. This is particularly relevant when considering a new job. It is hard to know what the alternatives are in the context of your existing experience and capabilities, possible career developments and potential employers, whether you are presently or potentially a salesman.

We are the only company in the Computer Industry providing sales training, market research, product promotion and sales recruitment services. We understand the problems. We are aware of the opportunities. We are the experts. MR. TRADER SAYS SO!
With apologies to Rickenbecker.

Contact us anytime.

Tel: 01-734 9776

A Sales and Marketing Services Company
TRAINING, PROMOTION, RESEARCH, RECRUITMENT

THE SALES AND MARKETING BIT

A CODE OF CONDUCT FOR PROFESSIONAL SALESMEN—PART 2

Dangers of sub-contracting

LAST week we started a three part article based on the creation of a code of conduct for professional salesmen. Here is another set of "10 commandments" for your analysis and criticism.

1. The salesman will not sub-contract any part of his selling responsibility to any agent or third party without the expressed authority of his employer.

2. The salesman will inform the client of any intention to sub-contract any part of the responsibility for producing/supplying the product or service being sold and state precisely what control he and his company will have over quality and reliability. He will ensure that any sub-contractors will be well known and proven practitioners.

3. The salesman will not in any circumstances allow himself to become party to any form of sharp practice or the use of any selling technique which will serve to mislead or take advantage of the client.

4. The salesman will not in any circumstances become involved in any form of price fixing or deception. This includes market sharing arrangements, falsifying tenders, deliberately under-quoting — in terms of price of product capacity — and the commission of additional costs in the form of related supplies, labour, electricity, construction, installation, licences, delivery, maintenance, environmental control, fuel, packaging, etc.

5. The salesman will not in any circumstances be party to any form of practice which could lead to corruption of any kind.

6. The salesman will ensure that the client is informed if a product is being offered which was originally intended for, or commissioned and paid for by, another client. He will also ensure that the originating client is made aware of such an arrangement and request his company to initiate formal agreement where none exists.

7. The salesman will not in any way denigrate the character of his company, his company's competitors or any fellow professional.

8. The salesman will not maliciously or recklessly injure or attempt to injure, directly or indirectly, the professional reputation, prospect or business of others by any action he might take.

9. The salesman will not exploit his relationship with any client by using the existence of any past or present business as a means of advertising or publicity without the expressed authority of the client concerned.

10. The salesman will ensure that any "reference sales" are totally valid in the context of the product being sold to the client and that such indirect recommendations are made with the full consent of the referenced client concerned.

That's all for this week. I hope by the time this is finished in one week from now you will have generated some ideas of your own on what a code of conduct for salesmen should look like.

TRADER

● Readers are invited to comment on the subjects discussed in Sales Bit, or to write about their own experiences in the market place. Letters should be addressed to Trader, Computer Weekly, Dorset House, Stamford Street, London, SE1 9LU.

Extra branches

NEW offices in London and Edinburgh have been set up by Redifon Computers. In London, central accounts, financial and government branches are at Holborn Hall, 100 Gray's Inn Road, WC1X 8AL Tel 01-404 0066. The Scottish branch is at Orchard Brae House, 30 Queensferry Road, Edinburgh, EH4 3HA Tel 031-332 1310.

Disc care

ADVICE on disc care, from initial unpacking, to storage, labelling and preventive maintenance is contained in a brochure produced by Nashua. Copies can be had from Frank Skinner, UK sales manager of Nashua, 1st Floor, Cory House, The Ring, Bracknell, Berkshire, RG12 1EI.

Distributors

REPORTS and publications produced by Auerbach are now being distributed in the UK by Computer Aid for Management Ltd, 32-36 Great Portland Street, London W1. Tel: 01-637 3691.

Video booklet

FOLLOWING the launch of its Visionpack modular CRT electronics system, video monitor specialists Digivision has prepared a booklet, "How to use your Visionpack", for the benefit of those users whose familiarity with TV-type circuitry is limited. Copies are free to existing users and to others from Digivision Ltd (CW), 82 Cannock Street, Leicester, LE4 7ahr.

Modem

BORER has added to its range of UK built modems a synchronous, 9,600 bps device, which automatically adjusts to line characteristics in two seconds. With a basic price of around £4,000, the 96 LSI can be used on leased lines or on the public switched network, and can fall back to half speed on bad lines.

An add-on printed circuit board, based on a Texas Instruments 4 bit bit-slice processor and US custom MOS LSI, enables four channels to be multiplexed on to one line using bit-interleaved time division techniques.

Puzzle Answer

THE order doesn't matter, but the shape does. To maximise the area enclosed, the four corners should all be on the same circle. This will make the quadrilateral cyclic, with opposite angles totalling 180°. In these circumstances the plot will be precisely √1 × 3 × 6 × 8, or 12 square furlongs.

PROGRAMMING STAFF FOR THE OIL INDUSTRY

The British National Oil Corporation is utilising Computer Systems in a major supporting role throughout its range of activities. The Corporation's computing activity is based on Hewlett-Packard mini-computers linked to a central mainframe. A wide range of exciting applications are at an early stage of development.

Opportunities exist for experienced programmers to fill key positions as SENIOR PROGRAMMERS and PROGRAMMERS in several project teams based in Glasgow. On-line program development facilities are used, and there will be involvement with modern data entry, file handling and real time software.

If you:

- have sound programming experience in COBOL and or FORTRAN.
- are capable of working on your own initiative.
- can work hard within the discipline demanded by exacting timescales in a project based environment.

these posts offer unique opportunities for job fulfillment and career development.

At either level you will be offered a salary which fully reflects the importance of the position. Other benefits include an excellent pension scheme and generous relocation assistance where appropriate.

If you are interested in these opportunities please apply to:

The Recruitment Officer,
The British National Oil Corporation,
160 St. Vincent Street,
GLASGOW G2 5LJ
Telephone No. 041-204 2526

The closing date for receipt of applications is 25th July, 1979.

BNOC

The British National Oil Corporation

UNIVERSITY OF SURR[EY]
COMPUTING UNIT

DEPUTY DIRECTOR
(circa £10175)

During the summer this year the [de]partment is installing its [...] system of linked Prime compu[ters,] the most advanced and powerful [...] across Prime system in Europe.

A Deputy Director is required [for a] progressive department and the [suc]cessful applicant will deputise for [the] Head of Department for a wide [range] of duties both inside and outside [the] University as appropriate. The [...] will assist in the running of the Depart[ment] and will be directly responsible [for] the management of the User Serv[ices] Group which provides program[ming,] advisory, information and teaching [...], development of operating systems [soft]ware and libraries, and assists with projects particularly in computer assisted learning.

Candidates should have a [...] flexible attitude, proven managerial ability, wide experience in programming, and good academic and professional qualifications.

A negotiable salary on the Computer and Other Related Staff salary scale around £10175 per annum plus generous annual leave.

Further particulars may be obtained from the Deputy Secretary (General), University of Surrey, Guildford, Surrey GU2 5XH, or telephone Guildford 71281, extension 462. Applications from men and women in the form of curriculum vitae, including the names and addresses of three referees, should be sent to the same address by [...] 1979.

PROGRAMMER REQUIRED

For expanding Structural Engineers in pleasant rural surroundings producing portal frame buildings. Knowledge of Basic Language essential.

Salary negotiable, usual benefits, assist with removal.

Apply in writing to:
O. A. Green & Sons Ltd.
Whaplode, Spalding, Lincs.

The Polytechnic of Central London
[School] of Engineering and Science
RESEARCH ASSISTANT
Salary £3087-£3261 inclusive of London Allowance
An Honours graduate in Science/Engineering required to act as Research Assistant in computer design.
Application form and further details from the Establishment Officer, 309 Regent Street, London W1R 8AL (Tel: 01-580 2020 ext. 212)

GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K

LONDON & HOME COUNTIES (LH). MIDLANDS (M). NORTH (N). SCOTLAND (S). OVERSEAS (O).

FOR THE BEST PERMANENT AND CONTRACT JOBS IN THE NORTH OF ENGLAND
Victoria Appointments
24 Mosley Street
Manchester 2
Phone
061-236 7310 or 7411
061-440 6134 (Home) (N)

£4000-£7000+
Analysts & Programmers
061-832 4184
(Transfer charges, if necessary)
Sampson Staff (NE)

A PROFESSIONAL RECRUITMENT SERVICE TO CLIENTS AND CANDIDATES
Vacancies in Scotland, England and abroad
Free advice on how to find computer staff.
DML COMPUTER PERSONNEL SERVICES
11 CHARLOTTE SQUARE
EDINBURGH EH2 4DR
031-226 6674. TELEX: 727330 (S)

COMPUTER INDUSTRY SPECIALISTS
SALES • SYSTEMS • MARKETING • ENGINEERING • PROGRAMMING
INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.
AUSTIN HOUSE, CHARLOTTE STREET, MANCHESTER. TEL: 061-236 7026

IPP (North)
NOTHING FANCY
JUST THE BEST
JOBS IN THE NORTH
061-834 5105 (24 hrs.)
58/60 Royal Exchange
Cross Street
Manchester M2 7DA

MINSTER MANAGEMENT SERVICES
MMS
8a Coney Street, York YO1 1NA
For details of services to clients and applicants
- ring Norman Routledge on 0904 24852 or 0904 797015 (evenings and weekends)
- or write in confidence to above address.

MA
FOR A PROFESSIONAL SERVICE THROUGHOUT SCOTLAND, ENGLAND, WALES, EIRE, CONSULT:
MAL-N ASSOCIATES LTD., 5th FLOOR, GORDON CHAMBERS, 90 MITCHELL ST., GLASGOW G1 3ND.
TEL. 041-226 4721. (S/N)

PERMANENT & CONTRACT
SDM COMPUTER SERVICES
Freepost
BEBINGTON
Wirral, Merseyside
L63 3AB, 061-608 9385 (N)
SDM

PROGRAMMERS & ANALYSTS
permanent and contract opportunities
TELEPHONE 061-941 1922
Gemini Computer Systems Ltd., Roberts House, 60 Manchester Road, Altrincham WA14 4PL
GEMINI Recruitment

QUADRANT RECRUITMENT LIMITED
Philip Hockley, Ashley House, Ashley Rd. Altrincham. WA14 2DB Tel: (061) 928 8302
Bill Baker, Bank House, Queen St., Sheffield S1 1UL. Tel: (0742) 738794

Inter-Selection
PROGRAMMER & ANALYST
vacancies in the NORTH
LEEDS, MANCHESTER
LIVERPOOL etc.
061-832 4181
or
061-928 0433
(eves)

Ivor Norton Management Services Ltd
Recruitment Consulting Division
52 Shaftesbury Avenue, London W1V 7DE
01 734 8862 (24 hour answering service)
P.O. Box 63, Copthall Tower House, Harrogate HG1 1TS. Tel: Harrogate 66528

8 DIGITS THAT ADD UP TO A GREAT JOB IN THE U.K. OR OVERSEAS
0565 4925

COMPUTER INDUSTRY SPECIALISTS
SALES • SYSTEMS • MARKETING • ENGINEERING • PROGRAMMING
INSIGHT MARKETING & PERSONNEL CONSULTANTS
72/78 Marylebone High St., London W1M 4AJ Telephone: 01-486 [...]
30 Upper Fitzwilliam St., Dublin 2 Telephone: [...]

FOR FURTHER DETAILS OF THIS NEW EVERY WEEK FEATURE
Contact: Owen Kelly 061-872 4211
Basil McGowan 021-356 4838
Mark Pulver 01-261 8174

NORTH WEST VACANCIES

MANCHESTER SENIOR PROGRAMMER
c £5,500
A senior programmer with 2 to 3 years COBOL and some ASSEMBLER experience can enjoy excellent benefits with our client. Latest hardware and systems.

OLDHAM SYSTEMS ANALYST
to £5,100
Our client is seeking an Analyst with around 2 years experience on either General Financial or Production systems. Opportunity to gain wide range of experience and to see projects through in real-time environment.

NORTH MANCHESTER SENIOR ANALYST
TO £7,000
Mature, professional Senior Analyst is required by a major North West ICL New Range user. Must be able to motivate and lead staff.

PRESTON TECHNICAL SUPPORT
to £7,000
Major UK organisation with large Distributed Processing network require flexible staff, already at Senior Programmer or Project Leader level, to provide technical support and control overall development.

NORTH WEST MANCHESTER SENIOR ANALYSTS c £6,000 + BONUS
Our client requires 2 Senior Analysts with a total of 4 years commercial systems experience. Major systems development and supervisory experience to be gained

MERSEYSIDE ANALYST/PROGRAMMERS
to £5,700 + BENEFITS
Analyst/Programmers with sound IBM COBOL background are sought by our client. Opportunity to work on highly advanced IBM technology. Excellent fringe benefits are available

PRESTON SENIOR PROGRAMMER
to £6,500 + BENEFITS
Our client requires a deputy chief programmer with at least 5 years COBOL and a good systems design background. Knowledge of OS/JCL and supervisory experience.

LIVERPOOL ANALYST/PROGRAMMER
c £5,100
IBM System 3 user requires an Analyst/Programmer with sound RPGII background. User liaison and opportunity to see system through.

NORTH CHESHIRE COBOL PROGRAMMERS to £5,100
Young COBOL programmers are sought by a leading UK organisation, large systems and hardware.

LIVERPOOL PROJECT LEADERS
to £8,000
Our client needs Project Leaders with in-depth knowledge for major developments. Latest systems and hardware.

LIVERPOOL SENIOR SYSTEMS ANALYST £7,000 + BONUS
Well educated and experienced analysts to work on large scale developments. Outstanding opportunities, attractive benefits.

NORTH CHESHIRE ICL ASSEMBLER PROGRAMMER £5,200
A young, personable System 10 Assembler Programmer is required by our client. Excellent prospects for well experienced staff.

SALE COBOL PROGRAMMER
c £5,400
ICL 1900 user requires a COBOL programmer with over 3 years commercial experience. Wide range of applications. Career prospects excellent.

LIVERPOOL SYSTEMS ANALYSTS
to £6,250
Analysts with 3 years experience on commercial systems required by company who will shortly update to 2900 hardware.

WARRINGTON ANALYST/PROGRAMMERS
£5,500
Our client offers major on-line development work on ICL 2900 hardware to Analyst/Programmers with commercial COBOL experience.

NORTH CHESHIRE REAL-TIME PROCESS CONTROL £5,000 to £9,000
Highly professional consultancy is seeking staff at various levels who have gained good Process Control experience. Knowledge of CORAL 66, RTLII and ASSEMBLER languages required.

MERSEYSIDE SYSTEMS ANALYSTS
to £6,400 + BONUS
Our client offers exciting development work for Analyst with over 3 years experience. IBM background preferred but not essential.

PRESTON COBOL PROGRAMMERS
£4,100 + BONUS
Young programmers with COBOL experience on either ICL or IBM hardware are sought by our client. Major development projects.

WARRINGTON COBOL PROGRAMMER
£4,300
A self-motivated COBOL Programmer with over 9 months experience is required to work on ICL TP systems.

MANCHESTER SYSTEMS ANALYST
to £6,000
Our client operates large IBM hardware and is seeking an Analyst with around 2 years commercial experience to work on CICS supported developments. A programming background is an advantage, but not essential.

MANCHESTER IBM ASSEMBLER PROGRAMMER c £4,400
ASSEMBLER applications programmer can enjoy very good benefits with our client. IBM hardware and latest systems.

WARRINGTON RPGII ANALYST/PROGRAMMERS
c £5,250 + CAR ALLOWANCE
Well motivated, ambitious RPG II Analyst/Programmers are sought by our client offering variety of development work.

STOCKPORT COBOL PROGRAMMER
c £4,300 + BONUS
Our client requires an ICL COBOL programmer with not less than 18 months experience to work on TP applications.

NORTH MANCHESTER ANALYST/PROGRAMMER to £4,850
Large company seeks analyst/programmer with a good commercial/manufacturing COBOL background for on-line developments.

BURY COBOL PROGRAMMERS
c £5,000
Large committed DP user requires COBOL programmers with 2 years experience on any major hardware.

NORTH MANCHESTER SENIOR SYSTEMS ANALYST to £7,000
Large IBM user is urgently seeking an experienced Senior Analyst to take control of development projects in both batch and on-line environments.

For further details of these and our many other vacancies in the North West contact **STEVE SYKES on LEEDS 444185** (daytime) or on **LEEDS 562417** (evenings and weekends) or write with brief career details (no stamp required) to Lorien Computer Services, FREEPOST, Leeds LS7 3YY.

LORIEN COMPUTER SERVICES
Recruitment Consultants
OCS House, Servia Road, Leeds LS7 1NJ
Telephone 0532 444185
(24 hour Ansaphone service)

MYRIAD

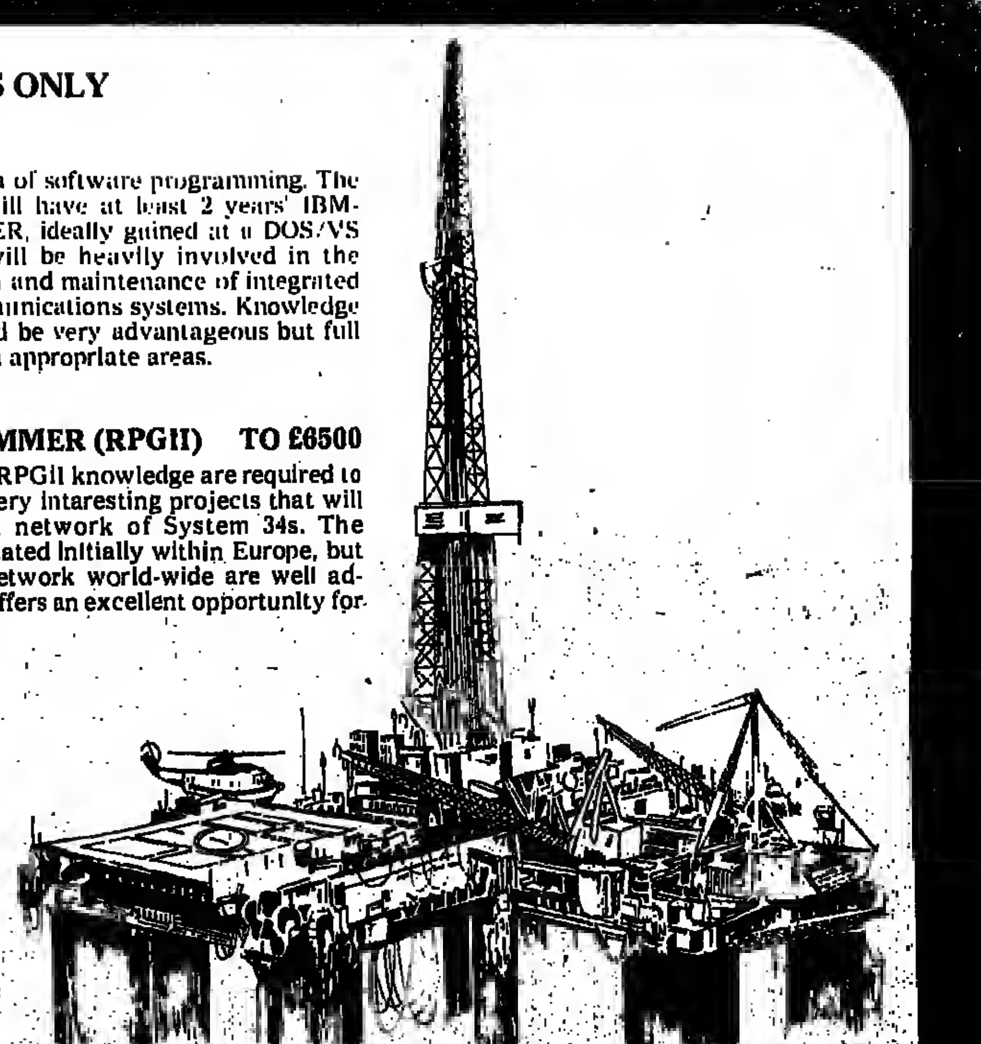
INTERNATIONAL DEVELOPMENT PROJECTS ONLY
CENTRAL LONDON

Our client forms part of an international organisation that is one of the world's most profitable and fastest growing corporations. Due to continued expansion, they are recruiting three key positions to assist with the development of various commercial systems utilising IBM 370 hardware with database and datacommunications software (a 4341 and 4331s are planned). Sytems 34s are intended for world-wide distributed processing. Full training will be given where necessary, as the company is primarily seeking persons with drive and ambition who are ready to accept added responsibilities in a progressive environment.

PROJECT LEADER TO £9500
The person appointed will take responsibility for a major on-line database project. An essential qualification will be the drive and initiative to run their own project with the minimum of supervision, coupled with the ability to inspire confidence at all levels of user management. Applicants must be willing to accept occasional international travel and possess a sound tachnical background.

SYSTEMS PROGRAMMER £6000-£8000
An experienced SYSTEMS PROGRAMMER will command a salary at the higher end of the range but the position is also open to PROGRAMMERS seeking to enter the specialist area of software programming. The successful applicant will have at least 2 years' IBM-compatible ASSEMBLER, ideally gained at a DOS/VS installation. He/she will be heavily involved in the design, implementation and maintenance of integrated database and telecommunications systems. Knowledge of CICS or DL/1 would be very advantageous but full training will be given in appropriate areas.

SENIOR PROGRAMMER (RPGII) TO £6500
Applicants with sound RPGII knowledge are required to develop a number of very intaresting projects that will be implemented on a network of System 34s. The machines are being located initially within Europe, but plans to extend the network world-wide are well advanced. This position offers an excellent opportunity for an ambitious person.



Generous starting salaries are further enhanced by a NON-CONTRIBUTORY PENSION SCHEME, £3.25 per week L.Vs, season ticket loan and a 35-hour week.
REF S4/2106

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA
01-353 0981 · 24hours